AC No. 43-16

.18

General Aviation airworthiness ALERTS

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ALERT NO. 18
JANUARY 1980

U.S. DEPARTMENT OF TRANSPORTATION
Federal Aviation Administration
Flight Standards National Field Office

TD 4.414.

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ADVISORY CIRCULAR
AC 43–16

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, D.C. 20590

GENERAL AVIATION AIRWORTHINESS ALERTS

JANUARY 1980

FLIGHT STANDARDS NATIONAL FIELD OFFICE
MIKE MONRONEY AERONAUTICAL CENTER

The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported to be significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: Flight Standards National Field Office, Attn: AFO-580, P. O. Box 25082, Oklahoma City, Oklahoma 73125.

AIRCRAFT

AGUSTA

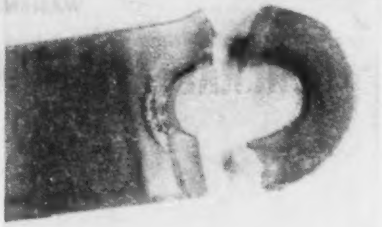
Agusta Model A109A	Bearing, P/N 109-0404-14-9	During post-flight inspection, a streak of oil was found on the main rotor transmission access door. The transmission oil checked low. Investigation, after raising the collective support sleeve, revealed the upper most bearing inner race was cracked. This is the second reported failure of the upper most bearing. Total aircraft time - 376 hours. The first reported failure was on another aircraft at 7 hours.

NOTICE TO READERS: The General Aviation Airworthiness Alerts are, for the most part, prepared from information supplied by those who operate and maintain aircraft. The FAA encourages the reporting of all malfunctions or defects that come to the attention of service or operating personnel, even though the problem has been previously reported. The Malfunction or Defect Report, FAA Form 8010-4, which supersedes Form 8330-2, is available from the local General Aviation District Office, and may be used for reporting purposes.

AYRES

Ayers (Snow)
Model S-2R

Bracket,
P/N 54029-6



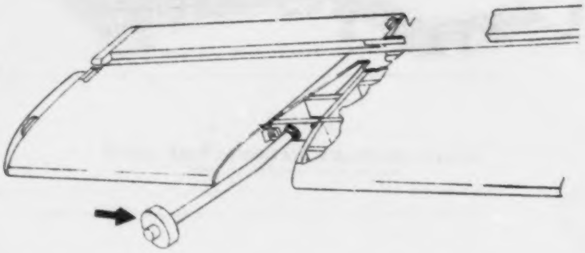
Elevator trim was ineffective. A bracket for the flying wire, located on top of the left stabilizer, was found broken. Operators are of the opinion the factory rigging was too tight. Total aircraft time - 950 hours.

See Alert No. 5, December 1978, for a similar article on a broken bracket which occurred during factory ferry.

BEECH

Beech
Model C24R

Stabilator Balance Weight,
P/N 169-620001-43



The balance weight was installed in reverse position on the stabilator actuating tube, P/N 620000-37. The weight was contacting the cable pulley and acting as the up stop and prevented the actuator tube from contacting the fixed stop in the fuselage. Weight (lead) was grooved by the pulley when acting as an up stop, and flattened when acting as a down stop. No aircraft damage was apparent. Total aircraft time - 247 hours.

Beech
Model 58

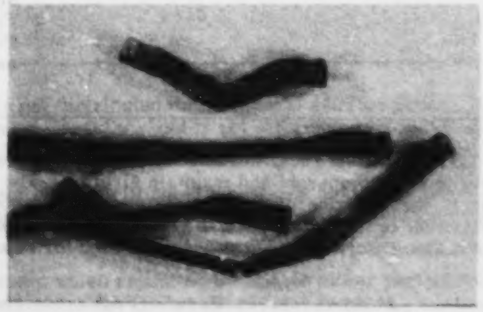
Air Conditioning System
STC SA 94RM,
P/N 58310-59

In the air conditioning system manufactured by the J. B. Systems, Inc., Longmont, Co., the compressor and drive system weighs 23 pounds and is mounted on the firewall of some aircraft.

In the installation on this aircraft, the mounting on the firewall was accomplished using 10/32 screws, washers, and nuts. The firewall was found cracked and extensively damaged, as there were no reinforcements provided to accommodate the additional load.

Beech
Model 58

Induction Manifold Drain Lines



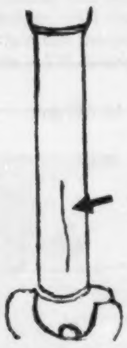
The induction manifold drain lines, installed on the Continental IO-520-0 engine at engine change, were Class VI, Tygon plastic. Heat from the exhaust manifold caused the tubing to shrink, thereby preventing residual liquid drainage from the induction manifold. Residual liquid, having no proper drain, could seep into the cylinders and cause liquid lock - an extremely hazardous condition. Total time on the engine - 500 hours.

Research indicates the correct hoses for this installation are MIL-H-6000, and are rubber, not plastic.

Beech
Model 60

Rudder Torque Tube,
P/N 60-630001-11

During annual inspection, personnel found the rudder torque tube cracked from the lower to the upper taper pin holes. Submitter's opinion is that water entered the torque tube and froze at altitude, splitting the torque tube. Total aircraft time - 2,082 hours.

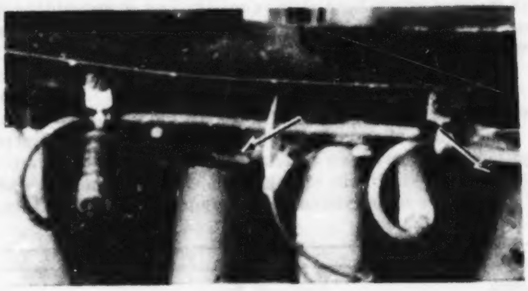


BELLANCA

Bellanca
Model 8GCBA
Lycoming
Model O-360

Exhaust Riser,
P/N 099001-120

On takeoff, a loud noise was followed by the odor of something burning. During the ensuing landing, the aircraft suffered major damage. Inspection of the engine revealed exhaust risers broken on cylinders 2, 3 and 4. Total aircraft time - 69.4 hours. This condition may be the result of stress set-up during assembly.



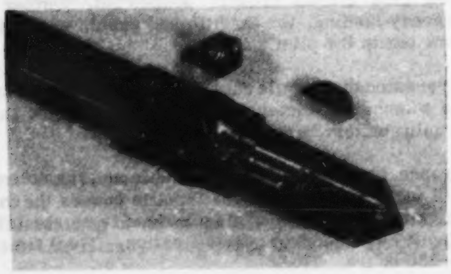
BRANTLY

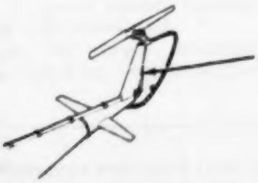
Brantly
Model B2B

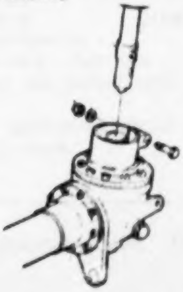
Tail Rotor Shaft Coupling Bolt,
P/N 249-11

The tail rotor shaft coupling bolt failed at the lower end of the shaft. This permitted the shaft to turn inside the coupling. The bolt at the top of the shaft attaching the bevel drive gear wore the attachment hole.

The aircraft is used for training and/or other operations subject to hard landings and/or tail rotor/boom strikes. The area should be inspected frequently for signs of deterioration. Total aircraft time - 2,200 hours.





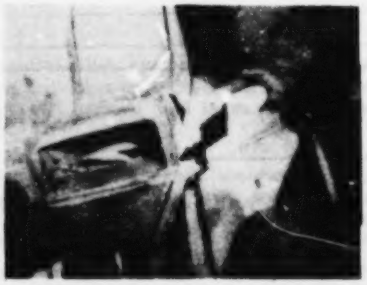


CESSNA

Cessna Model 150F	Elevator Bellcrank	During inspection and operational check of the flight control system, the elevator travel measured 15 degrees up and 25 degrees down. The maintenance specifications are 25 degrees up and 15 degrees down. The directional arrow and instructions on the elevator bellcrank indicated the bellcrank was installed upside down.
Cessna Models 150, 172, 175 and 182	Nose Gear Fork	Correction - The Airworthiness Directive referenced on page 5 of Alert No. 16, November 1979, should read 71-22-02.
Cessna Model 172L through 172N	Landing Lights	Cracking of the engine lower cowl in the vicinity of the landing light cutout has been reported on numerous occasions. There has also been a continuing problem with the landing light bulbs having a short service life. Beginning with airplane S/N 17272236, Cessna modified the lower cowl nose cap to reduce vibrations induced by the propeller. Cessna feels this change will substantially improve the landing light service life. Service Kit No. SK172-59 has also been prepared to enable this change to be installed on airplanes already in use. Cessna Service Information Letter No. SE79-15 provides further details of the change. Aircraft affected: S/N's 17259224 through 17272235 (non-airconditioned models only).

Cessna Models 180, 182J, and 185 — **Exhaust Pipe, P/N 0750161-86**

Exhaust pipe broke out of radius at entry to muffler. Extensive overheat damage was done to the lower cowling. The carburetor heat duct and carburetor heat tube burned. The aircraft made a precautionary landing. Total aircraft time - 1,469 hours.



Cessna Model TR182	Throttle Cable, P/N 9863055-8	During landing gear retraction, smoke appeared in the cockpit, and the landing gear circuit breaker popped out. During the ensuing emergency landing, the throttle and cable, when being retarded, came out in the pilot's hand. Investigation revealed the throttle cable had shorted on the positive lug of the solenoid contactors, P/N S1577-1, for the landing gear hydraulic motor. Normal clearance between the throttle cable and the solenoid lug is 1/4 to 1/2 inch. Operation of the throttle causes the cable to flex, reducing the clearance. This may lead to an electrical short or difficulty with landing gear operation. Total time on the aircraft - 230 hours.

Cessna
Model A188B

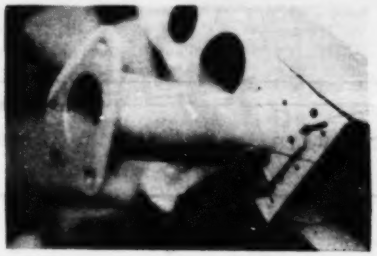
Propeller Spinner Bulkhead,
P/N 1652034-8

All screws attaching the bulkhead spinner plate failed and the plate became loose. All conditions indicate the screws were not tightened when the propeller was installed. Total time on the spinner plate - 136 hours.

Cessna
Model U206F

Torque Tube, P/N 1234650-1
Elevator Rib, P/N 1234037-1

The left elevator drooped more than the right elevator, with free movement between elevators. Investigation revealed the rivets which attach the elevator rib to the torque tube were sheared, and the elevator rib was damaged. Excessive load had been applied to the elevator with the gust lock in place. Total aircraft time - 757 hours.



Cessna
Models T206,
T207 and T210

Main Fuel Supply Hose

Investigation following an engine power loss, which resulted in a forced landing, disclosed the main fuel supply hose to the engine injector pump had been resting against the exhaust crossover manifold. This condition caused the fuel hose to become hot, and interruption in the fuel flow occurred as a result of fuel vaporization.

Cessna has determined that the minimum clearance between the fuel hose and the exhaust crossover is .80 inches. It is recommended that special emphasis be given to inspecting this hose to assure at least the minimum clearance is present each time the cowling is removed for maintenance.

Cessna
Model T210L

Alternator Ground Wire,
P/N FPB-26-10

Investigation of a fire forward of the firewall revealed the following:

1. alternator ground wire came loose from the terminal post connection at the noise filter, P/N 0770038-2; which
2. caused an uncontrollable alternator charging circuit; which
3. in seeking a ground, caused a short circuit to fuel line, P/N S1236-1;
4. burning a 1/8- by 1/2-inch hole in the fuel line forward of the firewall.

Cessna
Model 336/337
and SE Aircraft

Fuel Tank Caps

There have been reports of problems with the plastic vented fuel caps being installed to comply with Airworthiness Directive 79-10-14. The problems are:

1. new caps difficult to seat properly;
2. crack emanating from the vent - new cap;
3. nylon washer between cap and gasket split - cap total time - 25 hours; and
4. cap warped, resulting in approximately 20 gallons of fuel siphoning - cap total time - 5 hours.

The mailing of Advisory Circular 43-16 is taken from the addresses submitted from our district offices. Therefore, it is important to keep them informed of any mailing address change.

CONSOLIDATED AERONAUTICS

Consolidated (Lake) Model LA-4-200	Rod End, P/N 2-6300-49	There have been two recent reports of finding the propeller governor control rod end worn and unserviceable. The condition was found at 108 and 500 hours respectively. The worn parts were replaced with bearing type rod ends.

CONVAIR

Convair Model STC APJC (CV340)	Landing Gear Indicating System	The FAA Safety Information Program shows 142 Service Difficulty Reports in 2 years, of problems in the landing gear indicating system. The majority of problems were maladjustment of the up and down lock switches.

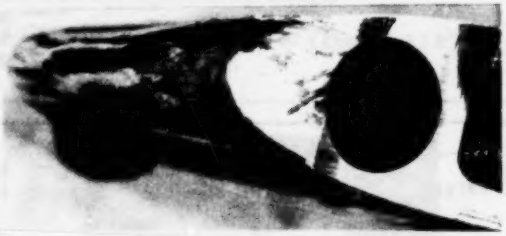
ENSTROM

Enstrom Model F28C	Main Rotor Blade, P/N 28-14100

Due to an in-flight vibration, a precautionary landing was made. Investigation revealed the leading edge of one blade severely corroded and starting to separate. Both of the other blades were corroded. Inspection revealed similar damage to all main rotor blades of another Enstrom helicopter.

Corrosion affects the outboard 6 feet of each blade. Separation affects an area about 18 inches in length, 4 feet inboard from the outboard end.

These blades were washed on a weekly basis. Total time on affected helicopters - 300 and 940 hours respectively.



Enstrom Model 280C	Pitch Change Assembly, P/N 28-16325	Due to extreme roughness in flight, an auto-rotation landing was made. Investigation revealed a stud which attaches the pitch change link to the retainer assembly had broken. The pitch control to one tail rotor blade was lost. Time on the retainer since inspection - 29 hours. Time on the retainer since new - 504 hours. Enstrom Service Bulletin 0040, dated May 20, 1977, had been complied with.

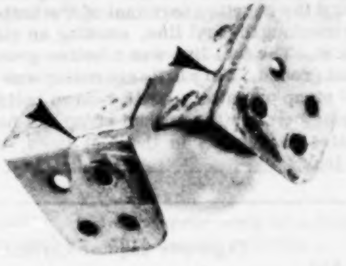
FAIRCHILD INDUSTRIES

Fairchild-Hiller Model FH-1100	Isolation Link Assembly, P/N 2430233-1	During preflight, the pilot was unable to lift the collective pitch control. Inspection revealed the isolation link assembly bracket was broken. Total aircraft time - 553 hours.

GULFSTREAM AMERICAN

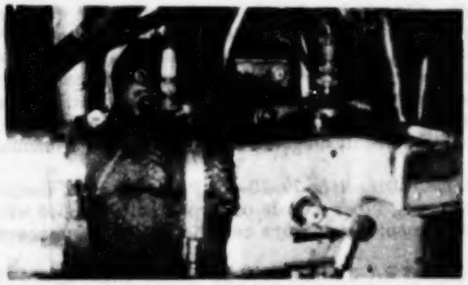
Gulfstream American Model AA-5B — **Cowling Brackets, P/N 5101026-1**

Brackets which secure the top cowling center spine to the firewall were found cracked. Total aircraft time - 1,085 hours.



Gulfstream American Model G-21A — **Bolts**

The bolts which secure the linkage connecting the primary and alternate air doors in the induction system air box are subject to rapid wear, due to vibration, and have been known to fail. When a new bolt is installed on the lower end of the linkage, ensure that it is installed with the head up, and that safety washers are installed.



PIPER

Piper Model PA-23-250 — **Fuel Lines**

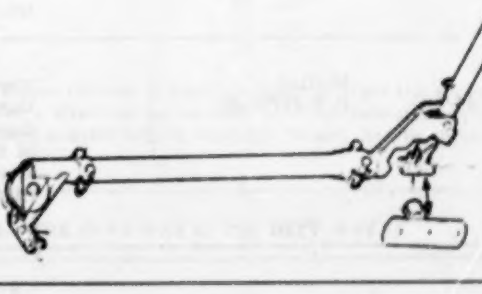
The left and right fuel lines, from the selector valve to the auxiliary pump, were found badly chafed by the alternator positive cable. Inspection of the lines is difficult, as they are located in the engine nacelle aft of the firewall. Total time - 1,945 hours.

Piper Model PA-23-250 — **Weldon Electric Fuel Pump, Model 33959-2**

There have been two reports of fuel leaking past the pump shaft seals into the electric motor. This condition causes a fire hazard and eventual pump failure. Aircraft times were 100 and 600 hours.

Piper Model PA-25 — **Control Cable Link, P/N 81352-15**

The elevator control cable connector link at the base of the control column was found badly worn and had to be replaced. This condition was discovered while accomplishing Airworthiness Directive 66-15-5 during an annual inspection. The elevator control would be lost if this part should fail.



READEX FICHE

Piper
Model PA-28-140

Battery Ground Strap

During inspection, a leaking fuel line was found in front of the battery compartment. Fuel leaking from several small holes in a small area had flooded the rear seat area. Further investigation revealed the ground strap connecting the rear spar and the negative terminal of the battery was intermittently touching the fuel line, causing an electrical arc between them. The fuel line was a better ground than the conventional ground. Very little corrosion was evident on the ground strap or battery box tie-down bolts. Evidently, the arcing between the ground strap and fuel line had caused holes to develop in the fuel lines, with the resulting fuel leak.

Piper
Model PA-31-350

Cigarette Lighter Circuit

In flight, the cabin filled with noxious smoke and fumes so severe that the copilot had difficulty reading an emergency checklist. Circuit breakers were pulled and an emergency landing was made. Investigation revealed a passenger had used the left cabin cigarette lighter, causing a dropping resistor to severely overheat and char phenolic mounting board, P/N R55543-302, nearly through. The resistor is a 2 ohm, 50 watt unit, P/N 55543-02. A 7.5 amp CB located on the resistor mounting board was also defective. The three aircraft lighter units were checked and the element resistances were less than 1 ohm. Lighter units are 12-volt, automobile-type units, in a 24V circuit, and the resistor that burned is part of the dropping network. The 7.5 amp CB is wired in series with a 15 amp main bus CB. This arrangement does not match the circuit diagram shown in the parts manual.

Airworthiness Directive 79-20-07, Piper Aircraft Corporation Amendment 39-3573, effective October 2, 1979, applies to the following Piper models of airplanes, equipped with three 12V cigar/cigarette lighters, powered through a triplet of voltage dropping resistors certificated in all categories.

PA-31 and PA-31-325, S/N 31-7712074 through 31-7912098, and PA-31-350, S/N 31-7752096 through 31-7952197.

Piper
Model PA-36-300

Aileron Mount Bolts,
P/N 401310

The pivot and mount bolts were found loose at the outboard end of the right aileron, and at the outboard and inboard ends of the left aileron. The cause for this condition was not determined. Aircraft total time - 295 hours.

Piper
Model PA-36-300

Fuel Tank Vent

The right fuel tank vent line was bent to a degree that ambient air could not enter the tank. This damage prevents fuel flow from the tank and causes erroneous readings on the fuel gauge because of a one-way check valve. The vent line is located near the wing tip, and apparently is easily damaged. Total aircraft time - 295 hours.

Piper
Model PA-36-300

Mixture Control Cable

The engine mixture control cable broke while operating the control. The housing support clamp in the console was too tight, which prevented swivel action. Aircraft total time - 295 hours.

Piper
Model PA-44-180

Muffler,
P/N 86299-02

There have been two reports of exhaust leakage to the extent that the cowling was discolored and the spark plug wires were damaged. Excessive clearance between the inside diameter of the muffler outlet and the outside diameter of the exhaust stacks caused the leakage on both engines on both aircraft. Aircraft times - 38 and 265 hours.

TAYLORCRAFT

Taylorcraft **Model BC12**	Lift Strut	Left front lift strut corroded through at a point 1½ inches above fuselage attach point. Total aircraft time - 2,510 hours.

UNIVAIR

Univair **Model 108** **(Stinson)**	Wing Strut Fitting	During inspection, the right rear wing attach fitting was found severely damaged by intergranular corrosion.

AIRFRAME COMPONENTS

GOODYEAR

GOODYEAR FUEL CELLS

The following remarks from the Goodyear Aerospace Engineered Fabrics Division, and the accompanying product support information bulletin, EFD 007, are published for your convenience and information:

"When Goodyear changed fuel tank construction from BTC-67 to BTC-85 material in December 1978, the nipple fittings were changed from Vithane to a nitrile vinyl compound. The nitrile vinyl compound is of a lower durometer, and uses a lower torque on the hose clamps to accomplish a seal.

"We feel it is appropriate to issue the subject document, repeating the recommended torque.

'PRODUCT SUPPORT INFORMATION
'NO. EFD 0007
'September 6, 1979

'Subject: BTC-85 Fuel Tanks, Recommended Nipple Fitting Torque

'The following information was transmitted to all general aviation airframe manufacturers in March 1979. A few tanks have been returned since then for repair of damaged nipple fittings; therefore, we feel it is appropriate to repeat the recommended torque.

'Nipple Fitting Inside Diameter	Torque Inch-pounds
.25 to .50 inch	12 - 16
.75 to 1.00	15 - 20
1.50	25 - 30
2.00	30 - 35
3.00	35 - 40

'Note: Always position hose clamps on internal nipple fittings in such a manner to allow the screw body to travel freely as the screw is tightened. Never allow the screw body to wedge between nipple fitting outside diameter and tank wall. This can result in false torque readings, leaks, and/or nipple fitting damage."

THE BEST WAY IS THE SAFE WAY - THE SAFE WAY IS THE BEST WAY.

ACCESSORIES

BENDIX

Bendix Model RSA10AD1	Injector Diaphragm, P/N 2529470	A fuel injector was installed on a Lycoming TIO-540-A2C. The engine was running rough and emitting black smoke during run-up. Adjusting the mixture control to lean did not improve performance enough for flight. Apparently the fuel injection servo diaphragm was ruptured, permitting unmetered fuel to enter the engine. Airworthiness Directives 78-23-10 and 79-04-05 do not apply to this injector.
Bendix	Magneto P/N D4LN2021 10-381970	A Lycoming IO-360A-1B6D engine would not start. Investigation revealed two coil screws were loose on the right side of the magneto, and the cabron brush was loose and material was contaminating the magneto. On the left side, the point cam follower had moved upward. Both sets of points were pitted. The bearing was binding the rotating shaft. Airworthiness Directive 78-18-04 had been complied with on July 13, 1979, at 401.8 hours. Total time on the magneto - 464 hours. Total time on the Mooney M20J - 464 hours.

PESCO

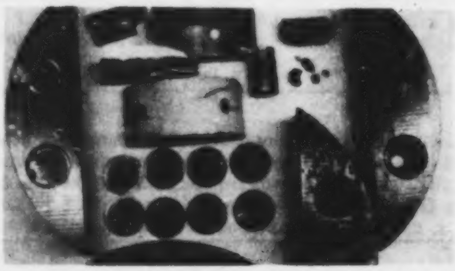
Pesco	Fuel Pump, P/N 025323-101	An engine quit on takeoff and could not be restarted. Investigation revealed the circlip holding the drive shaft coupling of the pump was worn, allowing the coupling to shift and wear the drive splines. Pump total time - 340 hours. The same condition was reported on another aircraft at 350 hours.

ENGINES

CONTINENTAL

Continental IO-470-E	Cylinder and Power Section

During annual inspection, a leak was noted at the junction of the cylinder and the cylinder head. The head was loose on the barrel. After cylinder removal, inspection of the counterweights revealed the plates had been rotating and had worn a groove in the counterweight. The damper retaining pin was found broken, with parts remaining in the counterweight. No. 4 main bearing insert was found broken. Time since top overhaul - 814 hours; time since major overhaul - 1,530 hours.



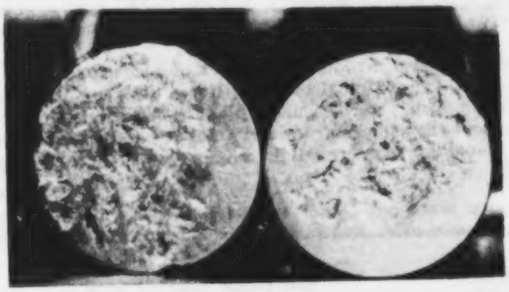
LYCOMING

Lycoming Model O-360-A1FD6	Oil Line Elbow, P/N MS20822-6	The propeller governor oil line elbow cracked at the forward end of the engine case. The result was loss of oil, loss of propeller control, and an emergency landing.

Lycoming
Model O-320-H2AD

Hydraulic Tappet Face,
P/N LW16585

Two reports indicate advanced or severe spalling of the tappet face of intake and exhaust valves. One report cited cylinders Nos. 1, 2 and 4, and the second report cylinders Nos. 1 and 3. Total time - 284 and 77 hours.



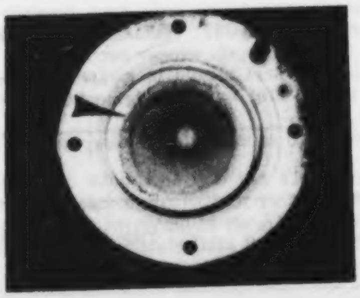
Lycoming Model TIO-540-J2BD	Actuator Seal, P/N LW12778470818-3	The waste gate actuator seal blew out, on ground runup, when the engine was advanced to full power at 2,600 RPM. Time on the actuator - 1.1 hours since overhaul. On the same aircraft, different actuator, another seal blew on takeoff. Time on this actuator - 92 hours. Same aircraft, still another actuator, seal blew 15 minutes after takeoff. Aircraft landed within 20 minutes and the engine oil tank was 3 quarts low. Time on this actuator - 71 hours since overhaul.
Lycoming Model TIO-540-S1AD	Turbo Oil Tank, P/N LW-14463	The oil tube that is welded to the tank broke around the outside of the weld, which permitted oil to run over the adjacent exhaust pipe. This created a hazardous condition, and a possible in-flight fire. Total aircraft time - 50 hours. A similar article appeared in Alerts No. 12, July 1979.

PRATT & WHITNEY AIRCRAFT OF CANADA

Pratt and Whitney
Model PT6A-41

Compressor Bleed Valve,
P/N 3027427

The right high pressure bleed valve face cracked two thirds of the circumference of the valve. Total time on valve - 172 hours. On this engine, another valve had failed at 305 hours.



PROPELLERS

HARTZELL PROPELLER
AIRWORTHINESS DIRECTIVE 55-03-02

Airworthiness Directive 55-03-02 (1955), in effect after issuance of Hartzell Service Bulletin No. 31 (1954), concerned the removal of nicks, gouges, and scratches from Hartzell metal blade propellers installed on Continental E185, E225, and O-470, and Lycoming O-320 and O-340 series engines. This action was to preclude the possibility of blade-tip failures on these specified propeller/engine combinations.

Your attention is directed to the lack of awareness of the 25-hour repetitive rework requirements of this airworthiness directive. The original and repetitive actions specify that all nicks, gouges and scratches within 15 inches of the blade-tip be removed. Care should be taken to be certain that all trace of the damage is removed. Minor damaged areas may be removed by using coarse emery cloth; then the repaired area shall be polished with fine emery cloth. Rebalancing is not necessary when repairing minor damage areas. Compliance was requested by March 1, 1955, and at intervals not to exceed each 25 hours of operation thereafter.

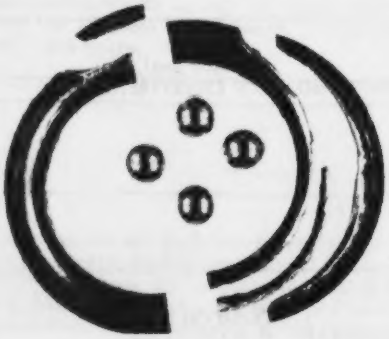
Hartzell Model HCB 3TN-38	Hub/Blade Bearing Race, P/N Split Bearing A-185T

During overhaul, the race for one hub/blade bearing was found cracked across and circumferentially, and had splintered into five pieces. The bearing surface of the race and ball bearings showed evidence of pitting and brinneling. The general condition of the bearing indicated a minimum of lubricant present.

NOTE: The lack of lubrication would precipitate a condition such as described for this bearing.

Maintenance records indicate the propeller had been in service for 2,600 hours since new in 1973.

Hartzell Service Letter No. 61E, dated March 26, 1979, recommends the propeller be overhauled at 3,000 hours or 4 years, whichever comes first.



MAINTENANCE NOTES

SHOULDER HARNESS

Certain manufacturers of seatbelts have recently produced shoulder harnesses and indicated that those harnesses met the requirements of TSO-C22. TSO-C22, applicable to seatbelts, does not apply to shoulder harnesses.

Airworthiness personnel should be aware that each installation of shoulder harnesses must be approved as part of the aircraft type certificate; or by supplemental type certificate; or in accordance with field approved procedures.

A TSO, applicable to shoulder harnesses, will be issued at a future date.

THE CHANCE-TAKER IS THE ACCIDENT-MAKER

IDENTIFICATION DATA PLATES

Advisory Circular AC 43-17, dated September 9, 1979, contains FAR guidance material concerning the installation, removal or change of identification data and identification plates on aircraft, aircraft engines, propellers and propeller blades and hubs. This AC is available for review in your local district office.

FUEL CONTAMINATION

During heavy rain conditions an operator pumped fuel into three aircraft. On one aircraft, both engines quit during taxi to the runway.

Investigation revealed the service well on top of the service truck did not drain properly. The forward drain lines were plugged with debris. With the drains not functioning, the well (approximately 8 inches deep), filled with water. In this well are the tank refueling access opening and the tank vent line. Both openings have rubber seals, and under normal conditions (drain functioning), would not leak. The tank truck fuel sumps were checked for water, with none found, before servicing any aircraft.

When the pump is engaged to service an aircraft, the vent line is automatically opened. Under the described conditions (drain plugged, well full of water), water drained through the vent into the fuel. The heavier water settled and was immediately picked up by the pump and serviced into the aircraft. Fortunately, there were no serious results from this occurrence.

The operator of this fuel truck has enlarged the drain holes from the service well. Also, a procedure has been initiated to check the service well for water before servicing aircraft.

All RECIPIENTS of the ALERTS who are involved with the operation of fuel service trucks should check those trucks for conditions which would lead to fuel contamination.

KEEP REFUELING HOSES CLEAN

A Sabreliner recently experienced loss of fuel through the vent system during flight. Investigation disclosed a piece of gravel had lodged under a secondary float shutoff valve for the single point refueling system. It is believed the gravel was induced into the system through the fuel vendor's single point adapter.

Fixed base operators should provide instructions to their ground personnel to keep fueling equipment in a clean and serviceable condition.

DEFUELING CAUTION

Maintenance and fueling personnel, and any others who might be involved in removing fuel from aircraft tanks, are reminded that defueling requires as much precaution against fire as normal fueling operations do -- sometimes more. Generally, most of the fuel can be removed in the same manner it is put in -- via a hose inserted in the regular fuel filler opening. What cannot be retrieved in that way must be removed by other means, such as through sumps or central valves in the system, into vented drums or other containers. This final phase of drainage creates special fire hazards. Although there is a relatively small, slow flow of fuel, a large quantity of dangerous vapors may be present. Grounding is absolutely essential through all phases of defueling.

The General Aviation Airworthiness Alerts are prepared from information submitted into the FAA Aviation Safety Information Program. You, who are actively engaged in operating or maintaining aircraft for return to service, are the major source of this information. Your comments and suggestions for improvement of the ALERTS are solicited. Address correspondence to the Flight Standards National Field Office, Attention: Safety Data Branch, AFO-580, Post Office Box 25082, Oklahoma City, Oklahoma 73125.

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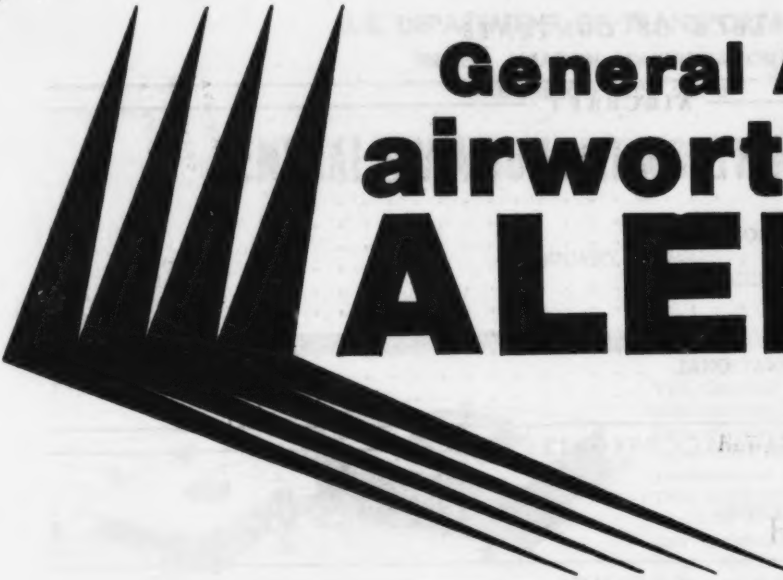

General Aviation airworthiness ALERTS

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FEBRUARY 1980

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Federal Aviation Administration

Flight Standards National Field Office

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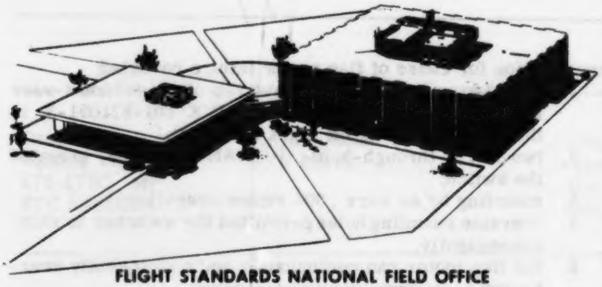
ADVISORY CIRCULAR
AC 43-16

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, D.C. 20590

GENERAL AVIATION AIRWORTHINESS ALERTS

FEBRUARY 1980



FLIGHT STANDARDS NATIONAL FIELD OFFICE
MIKE MONRONEY AERONAUTICAL CENTER

The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported to be significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: Flight Standards National Field Office, Attn: AFO-580, P. O. Box 25082, Oklahoma City, Oklahoma 73125.

AIRCRAFT

AVIONS MARCEL DASSAULT

Avions Marcel Dassault Model Falcon 10	**Hydraulic System Plug, P/N MS21913-6**	**Hydraulic pressure and quantity were lost during flight. The right engine was shut down to prevent hydraulic pump damage. Investigation revealed an "O" ring on the plug in the hydraulic connecting block, P/N 740004, installed in compliance with AMD Service Bulletin F10 29 006, had blown out. Three of those plugs are required by the service bulletin. The plug, P/N MS21913-6, apparently does not have enough shoulder to hold the ring in place properly.**

NOTICE TO READERS: The General Aviation Airworthiness Alerts are, for the most part, prepared from information supplied by those who operate and maintain aircraft. The FAA encourages the reporting of all malfunctions or defects that come to the attention of service or operating personnel, even though the problem has been previously reported. The Malfunction or Defect Report, FAA Form 8010-4, which supersedes Form 8330-2, is available from the local General Aviation District Office, and may be used for reporting purposes.

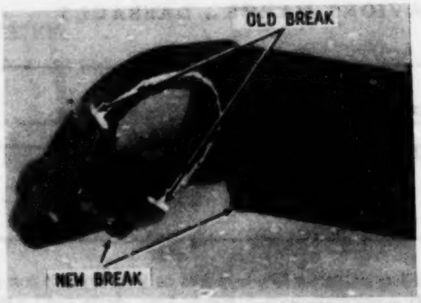
BEECH

Beech Model A60	Exhaust Stack, P/N 777429	The left engine, Lycoming model TIO-541-E1C4, lost power in climb, as the manifold pressure dropped from 40 to 23 inches. The aircraft returned to the point of departure. Investigation revealed the intermediate exhaust stack for No. 6 cylinder had dropped from the connecting slip joint. Apparently the stack engagement to the slip joint was inadequate. Time since engine overhaul - 540 hours.
Beech Model E90	Turnbuckle, P/N MS21251B2L	During an inspection, the left primary rudder turnbuckle was found split. The split occurred at the notch for the safety clip to the center hole. The opposite side, at the other end, was split in the same manner.
Beech Model 200	Flap Limit Switch, P/N BZ7RWT822	Investigation for cause of flap motor failure revealed: 1. up and down limit switches and two other switches were mounted on bracket assembly, P/N 101-521051-3, in the trailing edge of the right wing root; 2. two No. 6 through-bolts, P/N ANS515-6R52, mounted the switch; 3. mounting holes were .004 inches oversize; 4. oversize mounting holes permitted the switches to shift; consequently, 5. the flap motor ran continuously and consequently overheated to failure. This switch mounting configuration is applicable to aircraft with serial numbers BB 188 and up. Total time on the aircraft - 180 hours.

BELLANCA

Bellanca Model 7ECA Lycoming Model O-235-C1	Exhaust Riser, P/N 099001-120

During cruise, an odor of something burning was noticed, and the engine made a popping noise. Investigation revealed the No. 3 cylinder exhaust riser was broken and burned at the exhaust flange. Total aircraft time - 105 hours.



Bellanca Models 14-13 and 14-13-2	Wing Attach Fittings	Reports have been received of finding severe intergranular corrosion of wing straps and corrcded bolts. These aircraft are around the 1947 vintage.

CESSNA

Cessna
Model 150L

Propeller Spinner Bulkhead,
P/N 0450046-5

The propeller spinner bulkhead cracked in a 100 degree arc. Total time on the part - 100 hours. Possibly, unequal torque on the attach bolts had an adverse affect on the bulkhead.

Cessna
Models 172B-H,
175-175C, and
STC SA436EA

Engine Mount Cones,
P/N 10246

This aircraft was equipped with Franklin engine 6A-350-C2. The rubber cones at the rear mount were worn enough to allow the intake manifold to be dented by the engine mount. Total time since installation - 1,095 hours.

Cessna
Model 182

Antenna Cable Installation

The transponder antenna coax cable was deformed, damaged, and shorted internally by excessive tightening of the wrap used to secure the cable. Also, the excess cable length had been folded back under the tie wrap.

Hole cut in cable
by tie wrap

Cessna
182P

Rudder Control Cable,
P/N 0510105-77

During inspection, a mechanic found the nut attaching the forward left rudder cable, P/N 0510105-77, missing and the bolt almost backed out of the terminal end. Pieces of the cadmium-plated brass nut were retrieved from the lower fuselage. Brass nuts were also found on the parking brake pulley, P/N 5378-1L, and heater control arm, P/N 1253037-1. Cessna Service Letter 77-44 covers this subject; however, this aircraft serial number is above those called out in the service letter. Total aircraft time - 470 hours.

Cessna
Model 185

Brackets,
P/N's 0712042-1 and -2

Inspection for cause of excessive up and down travel at the outboard end of stabilizer revealed the rear attachment brackets were badly worn. A contributing factor to this wear could be improper torque of the stabilizer attachment bolts. Total aircraft time - 400 hours.

Cessna **Fuel Lines**
Model A185F **Control Cables**

The following discrepancies were noted during inspection:

1. **Fuel lines under floor, which were routed under the aileron cable, were cut by the cable; the left fuel line failed, and right fuel line failure was imminent;**
2. **left flap cables were wrapped around other cables in the left wing;**
3. **there was excessive play in the right side of the stabilizer; steel bushing had been omitted during installation; plastic sleeve was squeezed out of fitting;**
4. **installation of baffles around fuel boost pump was incomplete; paint condition suggested screws were not installed; and**
5. **the elevator cable was routed improperly in the center section and wore through fuel lines at the selector valve.**

Total aircraft time - 104 hours.

Cessna Model P-210N	Hose, P/N 2100003-15	During wing removal for moving the aircraft, it was noted that the left and right fuel return hoses were extremely hard and the outer coating was cracked. There was no indication of fuel leakage. Total aircraft time - 103 hours.

CESSNA MODELS 310, 320, 340, 401, 402, 411, 414, AND 421 SERIES AIRCRAFT--LANDING GEAR RETRACTION AND EXTENSION SYSTEM

Numerous incidents involving collapse of the landing gear were determined to have resulted from faulty maintenance and/or operational abuse. Some specific causes of landing gear operational difficulties are (1) premature retraction following liftoff, resulting in the aircraft settling on a partially retracted landing gear, thus inflicting damage to the operating mechanism and linkage; (2) extension of landing gear above the airspeeds specified by placards or flight manual; (3) out-of-rig conditions found in either the uplocks or downlocks or both; (4) damaged electrical warning and position indicating systems; and (5) lack of proper lubrication during maintenance.

In order to decrease the in-service occurrences involving the landing gear systems of these aircraft, and to assure a higher level of safety, it is recommended the following be used as guidance by aircraft owners/operators and/or maintenance personnel:

> **NOTE: ANYONE PERFORMING MAINTENANCE OR RIGGING ON THESE MODELS OF AIRCRAFT MUST HAVE THE APPROPRIATE SERVICE MANUAL AT HAND. It is also necessary to have the following Cessna Service Manual changes for Models 310 through 310K and 320, Service Manual Change Notice dated July 13, 1973; for Models 310 through 320N, 320, 422 and 422A, Service Manual Change Notice dated April 12, 1974; for later Models 310, 340, and 400 series aircraft, all necessary information is contained in the current service manual.**

The following items should be inspected with the airplane on jacks at 200-hour intervals:

a. retract mechanisms - inspect all link rods, rod ends, pivot shafts, gimbals, trunnions, drive tubes, seals and mounting structure for evidence of wear, looseness or other damage;

b. gear doors and links - check doors, hinges, hinge pins and linkage for evidence of wear, damage, and security of attachment. Check rigging per Cessna Service Manual instructions;

c. wiring and switches - check security of connections, switch operation, and gear position indicator lights for proper indication. Examine wires for worn or chafed insulation, kinks, or sharp bends;

d. rigging and operational check - perform operational check to insure proper rigging of all components, including main gear free-fall downlock tension, uplock hooks, doors, switches, drive tubes, and actuator. Check travel time in each direction; and

e. emergency manual extension - check operation.

The following items should be inspected for condition at each 50-hour interval (it is not necessary to place the aircraft on jacks):

a. nose gear - torque links, steering rods, boots, landing/taxi lights, strut for leakage and proper extension, strut barrel condition, shimmy damper, steering bungee; and

b. main gear - torque links, linkages, boots, strut for leakage and proper extension, strut barrel condition.

Cessna Model 340A	Air/Oil Separator Element, P/N 0850694-5	During inspection and service, the air/oil separator element was found chafing the interior of the cannister. Portions of metal abraded from the screen were found contaminating the oil supply and scavenge oil pump. Total time on the screen - 300 hours. It was reported that this was the sixth filter found in this condition.
Cessna Model 340R	Air Intake Duct Elbow, P/N 642590	The pilot reported low fuel flow and low manifold pressure during takeoff, and engine running out of power at 10 - 12,000 feet. An investigation revealed failure of the left air intake duct flexible elbow on the lower side. This is the improved elbow. Total time on the part - 250 hours.

CONSOLIDATED AERONAUTICS

Consolidated (Lake) All Models	Power Plant Controls	To prevent excessive wear, Lake Aircraft recommends 100-hour inspection of all power plant controls. As part of this inspection, the propeller governor control terminal should be examined for possible wear and freedom of motion, and lubricated, if required. In addition, the governor actuating arm should be checked for freedom of motion and condition of the return spring, by disconnecting the control terminal and operating it by hand.
Consolidated (Lake) All Models	Wing Rear Spar Attach Bolts	The rear spar attach bolts were found loose. When the bolts were removed, the boltholes were found elongated. The bolts were evidently improperly torqued. The angles and rear spar attach fittings were replaced.

GATES LEARJET

Gates Learjet Model 25B	Hose, P/N 2307006-103	The pilot was unable to extend the landing gear with the normal system. Emergency extension was used, and the aircraft landed without further incident. An investigation disclosed the left main gear up hydraulic hose had ruptured. The hose had been chafing on two screws that lock the gland nut holding the landing gear piston into the strut. The hose wire braid, at the low point of the long bend radius, was rusted where the hose had been holding trapped water. This was the second failure of this hose in 2,213 aircraft hours.

GULFSTREAM AMERICAN

Gulfstream American Model AA-5B	Nose Gear Axle Rod, P/N 702053-2

The fiber lock nut used on one end of the axle rod came off. This allowed the axle rod to back out of the fork and the rod was bent when the aircraft landed.

The submitter recommends the rod be made longer, and a constellated nut and cotter key used on both ends.

HUGHES

Hughes Model 369HS	Support Link, P/N 369A7314

Deep pitted corrosion was found on the support link lower bushing. The corrosion was almost completely around the brass insert. Total time - 2,550 hours.

HILLER

Hiller Model UH-12E	Fuel Quantity Indicator	The helicopter ran out of fuel during a crop spraying operation. Substantial damage was sustained during the hard landing. Investigation revealed the fuel gauge indicated 8 gallons with the tank empty. The gauge went to zero when tapped. Due to density altitude, a minimum fuel load is carried during operation.

PIPER

Piper Model PA-23-250	Bellcrank, P/N 16423-00	The right trailing edge flap bellcrank assembly broke on landing approach, which allowed the left flap to retract. The part showed indications of old crack in the break area. The crack was not visible during routine inspection. Inspection of this part requires removal and stripping. Total time - 980 hours.

Piper Model PA-23-250	Left Horizontal Stabilator, P/N 15658-02	While preflighting the aircraft, a crack 10 inches long was found in the bottom skin. The crack ran parallel to the rib at station BL36. Total time - 740 hours.
Piper Model PA-23-250	Main Landing Gear Wheel, P/N 161-58	During a 100-hour inspection, the inner half of the main gear wheel assembly was found cracked 6 inches in the tire bead radius area. Aircraft time - 707 hours.
Piper Model PA-24-250	Cable, P/N 21077-00	The brake cable failed during landing rollout. The cable had separated at a point below the pilot's floor, in an area that is difficult to inspect. Total time on the aircraft - 850 hours. Time since last 100-hour inspection - 41 hours.
Piper Model PA-28-161	Lockplates, P/N 73383-01	The alternator mount bolts worked loose, regardless of safety lockplates. The safety lockplate holes elongated, allowing plates to move. The crimp portion of the lockplates no longer locked bolts into position. Total time - 388 hours.
Piper Model PA-28R-200	Loose Battery	The battery box cover assembly was not secured in the aircraft. The aircraft encountered turbulent weather conditions during flight, and the battery was thrown out of the battery holder. A severe inflight fire resulted. The aircraft was landed without further incident.
Piper Model PA-28R-200	Oil Drain Valve, P/N 756517	

All engine oil was lost through a quick drain valve immediately after takeoff. The valve was activated when the nose landing gear was retracted. Inspection disclosed that the drain valve installed was not the correct part. Piper Service Letter No. 534A covers the installation of oil quick drain valves, and lists the correct part as P/N 492172. In addition, the maintenance record did not show that the quick drain valve had ever been changed.

The above article was published in the General Aviation Inspection Aids Summary, dated August 1976. The following is based on an accident which occurred in February 1978:

Engine failure resulted when engine oil was lost through the quick drain valve soon after takeoff. The valve was opened by nose gear retraction. Subject valve, prescribed for certain PA-28R-180's, creates an interference condition of a "booby trap" variety when installed on PA-28R-200's. The proper oil quick drain valve, P/N 492172, was provided under Piper Service Letter 534A, dated January 7, 1970, for the approximately 395 PA-28R-200's that had been sold with a crankcase drain plug prior to production incorporation of the P/N 492172 valve. This is at least the second time a PA-28R-200 has lost its engine oil after takeoff in the same manner.

The above articles were published in the General Aviation Airworthiness Alerts No. 7, February 1979. Reports continue to be received of loss of oil through incorrect part number engine oil quick drain valves.

When an incorrect drain is installed, there is insufficient clearance between the nose gear retraction assembly and the oil quick drain valve.

All persons involved with operating or maintaining these aircraft should be aware that installing an incorrect drain valve could cause damage to the valve or to the engine sump. This damage may cause loss of engine oil and possible engine seizure.

The PA-28/28R and PA-28R-201/201T parts catalogs indicate the correct drains for the various models and serial numbers affected.

Any time a valve is changed and there is any doubt as to the correct part number, it is recommended the landing gear be retracted to assure proper clearance between the gear retraction assembly and the drain valve.

Piper
Model PA-31

Bracket,
P/N's 42048-02 and -03

The door bracket was broken through the angle, and the part failed in tension. Total aircraft time - 900 hours.

Piper
Model PA-31

Elevator Stop Bolt,
P/N 419-991 and
Stop Nut, P/N 404-224

The FAA safety information systems contain 11 reports of problems with the elevator stop bolts and/or stop nuts. Nine of these occurrences were reported in 1979. These reports relate to finding the stop bolt loose or broken, or the stop nut loose.

Loss of elevator down travel results when the stop bolt becomes loose and backs out.

The seriousness of this condition is exemplified in a National Transportation Safety Board report, which relates to a fatal accident, wherein a chartered PA-31 took off, climbed, stalled, and crashed.

The NTSB determined the probable cause was a backed out elevator down-stop bolt that limited elevator travel and made it impossible for the pilot to prevent a pitch-up and stall.

Maintenance personnel are advised to check control surface travel, especially after any maintenance involving control surfaces and rigging.

Operators and pilots should also visually check control surface travel before every flight.

Piper
Model PA-31-350

Structural Damage

During an inspection, at 4,923 hours, structural damage was found in the following areas:

a. Left Wing:
   1. inbound spar, P/N 45165-02, station 147.5
   2. pulley bracket, P/N 40513-01
   3. angle, P/N 40467-00
   4. rib, P/N 40490-12
   5. flaptrack, P/N 4538-00
   6. area under flap track, P/N 45381-00
b. Right Wing:
   1. pulley bracket
   2. angle

Another report, at 8,495 hours, indicates similar damage.

Piper
Model PA-32R-300T

Stabilator

During inspection, the rigging of the stabilator was found 10 degrees for up travel and 14.5 degrees for down travel. The stops had not been loosened or moved. Service manual travel specifications are 14.5 for up travel and 10 degrees for down travel. Time on aircraft since new - 144 hours.

Piper
Model PA-38-112

Engine Mount,
P/N 7765102

The lower left tube of the engine mount was found broken at 436 hours. The break occurred between the sleeve and the nose gear housing. Airworthiness Directive 79-01-07 and Piper Service Bulletin 617 were complied with at 194 hours.

This is a common occurrence. The FAA Safety Information System shows 21 Service Difficulty Reports of failure of this part in 2 years.

Piper
Model PA-44-180

Throttle Cable,
P/N 95-493-10

The left throttle cable broke at the panel end during flight. Airworthiness Directive 79-05-11 had been accomplished. Both throttles had been reported stiff to operate since the aircraft was new. When the cables are disconnected at the carburetor, approximately 40 percent of the resistance is removed. Eight carburetors have been replaced on this aircraft in an attempt to improve the situation. Aircraft total time - 288 hours.

Piper
Model Aerostar
601P

Bolts

A fire in flight resulted in an emergency landing. Investigation revealed the fire was in the main electrical panel. Extensive fire damage was found to the wiring, both over-voltage relays, both starting vibrators, both diode heat sink assemblies, and the plastic retainer material used to hold the fiberglass insulation to the back of the royalite trim panel covering the electrical panel, P/N 176.88.

The bolts which connect the alternator cables to the diode/heat sinks were loose (finger tight). This loose connection could have resulted in an electrical short, with the aforementioned fire as the outcome. Total time - 321 hours.

ROCKWELL INTERNATIONAL

Rockwell International
Model NA-265-40

Seat Belt Cable,
P/N S-01-1405-105

The seat belt cable was found to have work hardened from flexing as the seat swiveled back and forth. Several strans of the cable on the other side of the seat broke when the cable was bent 90 degrees. It is recommended that the cables on the swivel chair be inspected for condition. Aircraft time - 9, 236 hours.

TAYLORCRAFT

Taylorcraft
Model F19

Exhaust Stack,
P/N 2590

The exhaust stack cracked at the edge of the heat affected zone, where the exhaust tube from No. 2 cylinder joins the exhaust stack assembly.

ACCESSORIES

CHAMPION

Champion | **Oil Filter, P/N CH48108**

CHAMPION
CH48108

The oil filter anti-drain back valve was found off center. This condition was noted when the oil filter was disassembled to determine the cause of fluctuating oil pressure.

TELEDYNE CRITTENDEN

Teledyne Crittenden | **Alternator, P/N 642056**

During cruise, the alternator out warning light came on, and a minor oil leak developed. Investigation revealed both alternator bearings had failed and contaminated the oil. The gear had worked into the drive coupling, and had cut metal from the engine case.

Total alternator time - 20 hours. Total engine, Continental GTSIO-520L - 199 hours; total aircraft, Cessna 421C - 199 hours.

ENGINES

AIRESEARCH

Airesearch
Model TPE-331-43BL | **Mounting Bolts**

During trouble shooting for low oil pressure, all the bolts holding the oil scavenge pickup housing were found loose, and one bolt was broken. Fretting around the bolts indicated they had been loose for a considerable length of time. Continued operation in this condition may have resulted in failure of the compressor drive input shaft. Total engine time - 442 hours.

CONTINENTAL

Continental **Model TSIO-520-B**	**Exhaust Flange Gasket,** **P/N 628260**	**The pilot noticed engine roughness, then complete loss of power and flames coming from the left engine. Fuel was shut off, but the propeller could not be feathered, so a return was made to the point of departure. The fire was extinguished on the ground. Extensive damage was done to the aircraft.** **Investigation revealed two exhaust stack studs, the exhaust flange gasket, and fins missing from the No. 2 cylinder. The No. 2, 3, and 4 cylinders had been installed 42 hours previously.**

LYCOMING

Lycoming
Model O-360-A1F6D

Oil Pump Driven Gear

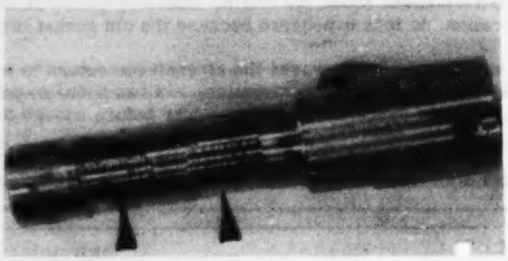
Investigation of a loss of oil pressure revealed the sintered metal driven gear in the oil pump had eight of ten teeth broken off and was cracked. Also, the machined surfaces were very porus (pitted). One of the broken teeth had jammed the driving impeller, causing the oil pump drive shaft to shear one tooth and damage the crankshaft gear. Total time on parts - 1, 187 hours.

The engine had accumulated 687 hours since compliance with Airworthiness Directive 75-08-09.

Lycoming
Model TIO-540
Series

Propeller Governor Idler
Shaft, P/N LW 14021

The reporting repair station states that during inspection of engines using this part number shaft, in approximately 50 percent of the engines, the shaft has been found badly worn. Total time on the shaft illustrated - 1, 500 hours.



PROPELLERS

McCAULEY

McCauley	**Hub,** **P/N D2A34C58-0**	**The hub and blade retainer nuts on a propeller that was in for major overhaul were found cracked at 795 hours time in service.**

MAINTENANCE NOTES

LIGHTNING STRIKE

The following maintenance inspection hints might be of help should a lightning strike occur to your aircraft:

1. determine where the lightning entered and exited the aircraft;
2. entry of the lightning usually burns the paint (should it hit the aluminum structure), and damages the rivets in the adjacent area of the lightning entrance;
3. lightning will separate fiberglas radomes and dorsal fins, and may destroy radio and navigation equipment;
4. static wicks and flight control bond jumpers have been burned;
5. where the lightning leaves the aircraft, it has been known to burn away tip tank fins and/or burn holes in tip tanks, flight controls, and flaps;
6. after inspecting the outside of the aircraft for any of the above conditions, determine the probable electrical path, such as nose to tail, then remove access panels as necessary;
7. inspect hydraulic, fuel, and vent lines for arcing or burned spots. All control cables and pulleys should be thoroughly inspected for arced or burned spots. Pulley bearings should also be checked for a rough or welded condition;
8. all flight control bearings should be checked for a rough or welded condition;
9. most engine manufacturers advise that they be contacted concerning engine inspections after lightning strike;
10. a general rule of thumb is to replace any components that are suspect.

MURPHY'S LAW

While on a pleasure flight of approximately 35 minutes duration, the pilot noted a sudden loss of engine oil pressure. Prior to reducing the power setting, the engine failed internally due to oil starvation. The pilot executed a landing in a farm field with no damage to the aircraft and no injuries to the pilot or his passenger.

Investigation of this incident revealed the following: The lower side of the fuselage aft of the firewall was covered with engine oil, which indicated a severe oil leak. Because a new engine-driven vacuum pump had been installed prior to the flight, the pump was removed for further investigation.

Although a new mounting pad gasket had been installed during installation of the pump, all of the old gasket material was not removed from the engine mounting pad. This allowed engine oil, which is supplied to this pad for wet pump lubrication, to leak overboard because the old gasket material prevented a positive seal at the pad.

The mechanic, who approved the aircraft for return to service following the pump installation, stated they had run the engine to determine pump operation, and had noted no oil leaks. It should be noted that it took approximately 35 minutes of engine operation at cruise power before enough oil leaked overboard to create the oil starvation problem.

Mr. Murphy certainly got in the act here. It was an expensive mistake, and could have resulted in a serious accident had the pilot not landed the aircraft with no damage or serious injuries.

UNAUTHORIZED MODIFICATION

Rotation of the crankshaft did not produce magneto rotation or valve rocker arm action. Inspection of the gear drive system in the accessory drive section revealed the crankshaft gear had separated from the crankshaft.

This Lycoming O-235-2 engine is the military version of the type certificated O-235 series engine. A type certificated crankshaft, P/N 62531, was installed in this O-235-2 engine at overhaul.

The crankshaft drive gear, P/N R-326, must be used in the O-235-2 engine, and will not fit the type certificated crankshaft, P/N 62531.

Someone fabricated an adapter washer and this was welded to a crankshaft gear, P/N R-326, so this gear could be attached to the crankshaft, P/N 62531. This gear separated from the crankshaft when the weld failed. The failure occurred during flight in an amateur built aircraft. Total time since engine overhaul - 17 hours.

THE QUALITY OF SOME FASTENERS IN QUESTION

Several manufacturers of fasteners such as nuts, bolts, screws, etc., and the Federal Trade Commission, have indicated that the alteration, rework, and forgery of standard fasteners is commonplace.

The quality control of these fasteners, used in the production of aeronautical products, is achieved through the manufacturer's quality assurance programs which are, in turn, subject to FAA approval and surveillance.

Fasteners used as replacements are not subject to such control, and are exempt from the provisions of Section 21.303 (b)(4) of the FAR, since they are classified as "small standard parts."

Persons replacing such fasteners should assure themselves that the fasteners used are properly marked and do not exhibit indications of alteration or rework. Efforts expended in ensuring that the product is traceable to the manufacturer would be well spent.

If you have any question regarding the quality of a fastener, bring that question to the attention of your supplier and the fastener manufacturer.

PITOT COVERS

Several suppliers have recently made plastic pitot tube covers available. Some of these have reached owners without breather holes. Without such holes, and when the plastic covers fit the pitot tubes snugly, removal or installation can cause pressure surges which may result in hidden damage to airspeed indicators. This can cause indicator needles to peg.

Pilots and maintenance personnel should ensure that these pitot covers have small breather holes at their closed end or other provisions to prevent damage to instrumentation.

COLD WEATHER OPERATION

Advisory Circular 91-13C, dated July 24, 1979, provides background and guidelines relating to operation of aircraft in the colder climates where wide temperature changes can occur.

CAUTION

PLASTIC BUTANE LIGHTERS

The following information was received with a request for wide dissemination:

> One private company experienced two deaths in a 30-day period, resulting from plastic butane lighters in welding shops. One resulted when a slag spark from a burning operation flew into a man's pocket, burned through the lighter and exploded, causing instant death. The other occurred when a welding spark burned through a man's pants pocket, causing the lighter to explode. The man's leg was amputated. He died 3 days later.

Needless to say, no one should carry disposable butane lighters on their body during or near welding operations.

The General Aviation Airworthiness Alerts are prepared from information submitted into the FAA Aviation Safety Information Program. You, who are actively engaged in operating or maintaining aircraft for return to service, are the major source of this information. Your comments and suggestions for improvement of the ALERTS are solicited. Address correspondence to the Flight Standards National Field Office, Attention: Safety Data Branch, AFO-580, Post Office Box 25082, Oklahoma City, Oklahoma 73125.

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ALERT NO. 20
MARCH 1980

U.S. DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Flight Standards National Field Office

TD 4. 414:

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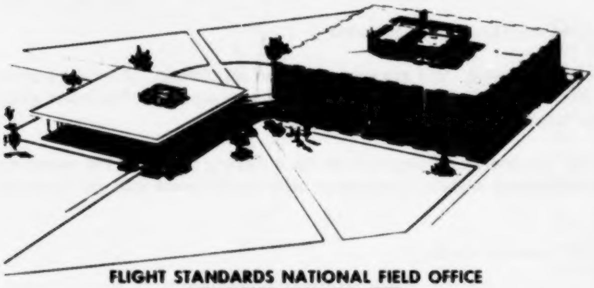
AC 43-16

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, D.C. 20590

GENERAL AVIATION AIRWORTHINESS ALERTS

MARCH 1980



FLIGHT STANDARDS NATIONAL FIELD OFFICE
MIKE MONRONEY AERONAUTICAL CENTER

The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported to be significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: Flight Standards National Field Office, Attn: AFO-580, P. O. Box 25082, Oklahoma City, Oklahoma 73125.

AIRCRAFT

AEROSPATIALE

Aerospatiale Model SA. 316B	Fuel Quantity Transmitter, P/N 3130551-20-009	The helicopter ran out of fuel with the fuel quantity gauge reading 20 gallons. The aircraft suffered considerable damage in the ensuing landing. Investigation revealed one pint of fuel remaining, and the warning light was inoperative. Total aircraft time - 2,243 hours.

NOTICE TO READERS: The General Aviation Airworthiness Alerts are, for the most part, prepared from information supplied by those who operate and maintain aircraft. The FAA encourages the reporting of all malfunctions or defects that come to the attention of service or operating personnel, even though the problem has been previously reported. The Malfunction or Defect Report, FAA Form 8010-4, which supersedes Form 8330-2, is available from the local General Aviation District Office, and may be used for reporting purposes.

BEECH

Beech Model C23	Starter Relay, P/N DR 1464	The propeller started turning when the ignition switch was turned on. An investigation disclosed the windshield had leaked and water had run down and entered the relay through the relay cap. Corrosion was found inside the relay. The submitter advised this relay can be installed 180 degrees from the installation found, with the cap facing down, which would prevent entrance of water.

Beech Model A60	Nose Gear Strut, P/N 60-820020-3

Investigation of failure of the nose gear to properly extend disclosed the following:

1. The push-pull retraction rod, located in the nose gear well, had separated at the aft fitting. The nose gear cam track, located in the forward upper portion of the nose wheel well, had separated in two places. The nose gear was very difficult to rotate in its steering plane because of internal binding.

2. During retraction, the nose gear is rotated counter clockwise 90 degrees in its steering plane by the steering arm contacting the cam track. (The rotation must be accomplished without binding or additional loads will be imposed on the retraction system and the cam track.)

3. The retraction rod separation had characteristics of tension loads.

4. The cam track separations occurred approximately one-half inch from the aft end, mid point of the cam. The right surface of the cam had characteristics of compression loads. This surface bears the greatest loads from the steering arm during retraction.

5. Disassembly of the nose gear disclosed the surfaces of barrel bushings and strut bearings were corroded and void of lubrication.

6. The aircraft had 790 hours of service, and there was no evidence that the inspection or preventive measures had been accomplished. (Beechcraft Service Instructions 0669-206 require inspection of the nose gear assembly for corrosion and application of corrosion-preventing compound on aircraft with 1,000 hours or more time in service.)

The Beechcraft service manual does not include, in the scope of a 100-hour inspection, the checking of the nose gear for freedom of movement through its steering plane.

(Note: Useage and environmental conditions may require more frequent inspection for proper lubrication and for corrosion than given in the maintenance manuals.)

Beech Model 200	Main Wheel Assembly	The right outboard main wheel bearing was found disintegrated after the aircraft had taxied in from a flight. This was the third main wheel bearing failure on this aircraft in 641 hours. Heat from brake drag during taxi may cause the wheel bearing grease to dissolve.

BELL

Bell Models 47G-2A; 47G-3, -3B, -3B-1, -2, and -2A; 47G-4 and -4A; 47G-5 and -5A; and 47J-2 and -2A	Rod End Bearing	The tail rotor link rod end bearing has been found worn sufficiently to allow the rod end housing to shift onto the tail rotor blade pitch horn stud boss, restricting the flapping action. This caused excessive reverse bending loads in the link, which eventually failed. This tail rotor link assembly, P/N 47-641-172-5, is part of the new Bell 206 tail rotor assembly, P/N 47-641-170, used on the above Model 47 helicopters. The Bell 47 maintenance manual sets forth daily inspection requirements for these link rod assemblies, and requires replacement of the rod ends IF the axial or radial play exceeds 0.015 inch. Also, a safety washer has been designed to prevent the rod end housing from shifting onto the pitch horn stud boss. Bell Helicopter will issue a technical bulletin when parts become available. Operations Safety Notice 47-79-1 covers this same subject.
Bell Model 206B	Tail Rotor Blade, P/N 206-101-750-7	During a daily inspection, a crack was found in the tail rotor blade. The crack was 3½ inches across the blade chord, 5 inches from the root end of the blade. The crack ran from under the edge of the abrasion strip, toward the trailing edge.

BELLANCA

Bellanca Model 7KCAB	Aileron Hinge	During an inspection, at 600 hours aircraft time, the right aileron hinge was found cracked at the top and bottom tabs.

BRITTEN NORMAN

Britten Norman Model BN-2A-8	Main Gear Pin, P/N AIR 155796

The left main gear special torque link pin broke during landing roll. There was evidence of a pre-existing crack in the pin. Non-destructive testing of the pins during inspection is recommended. Total aircraft time - 8,400 hours.

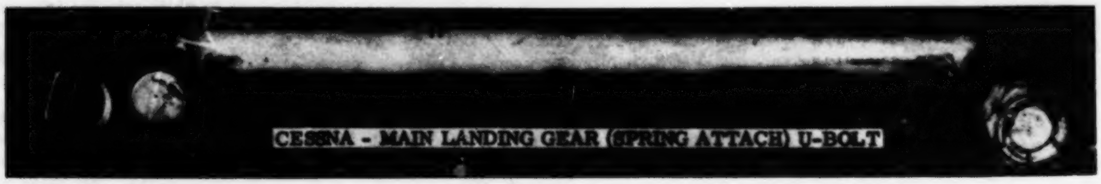
CESSNA

Cessna
Models 150 through 150K, 172 through 172K, and 175

Main Landing Gear U-Bolts,
P/N's 0441161 and 0541153

One end was broken from both main U-bolts. Failure of the main landing gear U-bolts continues to be a problem. The failures primarily occur across the threads.

It is suggested these bolts be checked during all inspections. Maintain torque values in accordance with the current Cessna 100 Series Service Manual.



CESSNA - MAIN LANDING GEAR (SPRING ATTACH) U-BOLT

Cessna
Model R172K

Seat Rail,
P/N 0511243-4

The pilot's inboard seat rail was not riveted from the seat belt bracket forward. Eleven rivets were missing. Further examination under the floor revealed a hat section doubler had not been installed. These discrepancies were found during an acceptance inspection of a new aircraft.

Cessna
Model 177RG

Actuator Bearing,
P/N S2049-6FG

The landing gear failed to extend for landing. An investigation disclosed the rod end bearing of the main gear actuator had failed. Total aircraft time - 260 hours. Articles have been in previous Alerts reference this problem. These changes relate to the service history of the main gear actuator rod end:

> "Rod end, P/N S2049-6FG, was installed on production airplanes from serial number 177RG0001 through 177RG0962. Effective with S/N 177RG0963, a higher strength rod end, P/N S2049M6FG, was installed during production and for all spares. This part (S2049M6FG) was not totally effective in eliminating the failure problem.
>
> "Cessna issued Single Engine Service Letter No. SE79-37 on August 6, 1979, which announced the availability of a new rod end for all in-service airplanes up to and including S/N 177RG1366. This new rod end is made by Astro, and is identified with Cessna P/N S2426-6. The manufacturer's part number may also be on the part, and is Astro P/N BRG-ARB6EDU."

Cessna Single Engine Service Letter SE79-37 recommends that the present main landing gear actuator rod end be replaced with the new part prior to or at the next annual inspection.

Cessna
Model 195

Ignition Switch

The engine was hard to start, but performed normally, once started. After a long investigation, it was found that the voltage in the primary circuit of the battery ignition system was only 2 to 3 volts, and 12-14 volts at other points. Further investigation revealed an hour meter, which had been installed sometime previously, was connected to the battery terminal of the switch. The hour meter had malfunctioned, and essentially grounded the battery wire. The hour meter should have been connected at some point on the bus bar - not into the ignition circuit. For aircraft with the battery ignition and hard to start, it may be a good idea to remove the protective cover and check the ignition switch for the above or similar condition.

Cessna
Model 200 Series
(Turbocharged)

Alternate Air Door Hinge

Some operators of turbocharged Cessna 200 series aircraft have experienced problems with ingestion, by the turbocharger, of the hinge pin sleeves from the aluminum "piano type" hinge of the alternate air door. Operators should be alert to possible deterioration of these hinges, and replace the aluminum hinges with the new steel hinge at the first sign of deterioration.

Cessna
Model P210

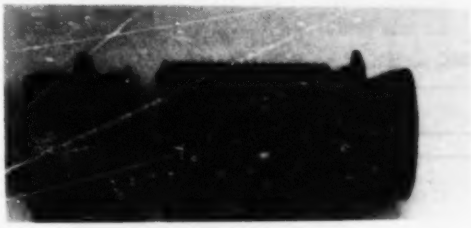
Alternator,
P/N C611505-0101

The alternator was repositioned when the air conditioning system was installed in accordance with STC SA180 RM. The rear baffling inside the upper left cowl rubbed against the alternator housing and the alternator positive post when the aircraft was in flight. Chafing from the baffling slid the rubber boot off the alternator terminal post. This resulted in short circuiting of the alternator to the baffling. The shorting was serious enough to burn the alternator post and burn a hole through the baffling. Suggest closer inspection to assure proper clearances for all aircraft operations. Assure the rubber boot is sufficiently covering the alternator positive terminal.

Cessna
Model 402A

Exhaust Bellows,
P/N 0850660-9

The exhaust bellows failed in flight, causing damage to the aircraft. The bellows was installed on the left engine inboard exhaust, and had 46 hours of operation since the exhaust system was inspected in accordance with Airworthiness Directive 75-23-08.



Cessna
Model 402B

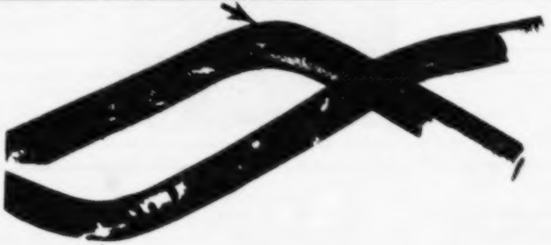
Alternator - Prestolite
Model ALV9407

There was a loss of all electrical power, navigation, communication, and transponder during an IFR flight. An investigation, after landing, found ice packed around the alternator F-1 and F-2 terminals. The ice had shorted the alternator field, causing loss of electrical power.

Cessna
Model 404

Hydraulic Line,
P/N 5727100-22 and 23

There have been three recent reports of loss of fluid and pressure through ruptured lines. The cracks were in the 30 degree bend radius of the tubing. Average aircraft time - 980 hours.



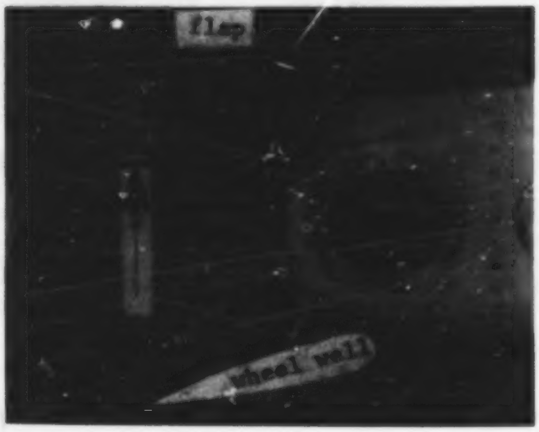
Cessna
Model 421C

Bulkhead,
P/N 5112011-2

During an annual inspection, a 1½-inch-long crack was found in the bulkhead at station 355.55. The crack could not be seen from outside the tailcone. Total aircraft time - 528 hours.

Cessna Model 441	Elevator Cable, P/N 581503-6	There have been recent reports of finding the right elevator up cable frayed under the pulley, P/N S378-4, at fuselage station 292.05. Average Aircraft time - 400 hours.

Cessna Model 500	Chafed Hydraulic Line



During an inspection, the right flap inboard access panel was removed. It was noted that the access panel had excessive wear along the right side, caused by a screw head. Further investigation revealed the screw, P/N MS2493S278, and spacer, P/N NAS43DD3-24, supporting the right speed brake lines had worn through the skin covered by the access panel. This action resulted in allowing the supported hydraulic lines to drop down, and the inboard flap push/pull rod to chafe on the speed brake extension line during wing flap operation. Wear through the wall of the line was over 50 percent.

The screw, spacer, and nut were found tight, indicating that the defect was caused by vibration, and could have resulted in a loss of hydraulic fluid from the rubbing action. The vibration action could have been caused by air loads or fluid vibration of the hydraulic lines or both.

Cessna Model 500	Piston Weld Assembly, P/N 5541108-2	During a preflight inspection, the lower right main gear piston weld assembly was found split open at the bore where the axle shaft attaches. Total aircraft time - 5,147 hours.

CONSOLIDATED AERONAUTICS

Consolidated (Lake) Model LA-4-200 S/N's 740 through 997	Main Gear Retraction Mechanism	A report of a failed rocker casting, P/N 2-4113-1, has been received. These castings were located at the upper end of the main gear struts. Earlier aircraft used a different design with no reported failures. Lake Aircraft has issued Service Bulletin No. B36 on this subject, and will provide free replacement parts and reimburse owners $15 for labor to install parts, upon receipt of a signed statement verifying part replacement and serial number of aircraft.

FAIRCHILD INDUSTRIES

Fairchild Hiller Model FH-1100	Tail Rotor Hub, P/N 24-55130	The pilot reported high frequency vibrations during flight. An investigation and disassembly revealed excessive brinelling of the tail rotor hub and the tail rotor bearings. The probable cause was lack of proper lubrication. Part total time since overhaul, 1,110 hours.

SAFETY IS THE RESPONSIBILITY OF EVERYONE IN AVIATION

GATES LEARJET

Gates Learjet
Model 23

Throttle Cables

The aircraft was in a heavy rain prior to takeoff. The pilot was unable to move the throttles upon reaching flight level 410. The aircraft descended to above freezing temperature, and had left engine control, but could not reduce power below 80 percent on the right engine. Suspect rain water entered and froze in the throttle cables at altitude. Both throttle cables were replaced.

Gates Learjet
Models 35/35A
and 36/36A

Thrust Reverser,
P/N 6608231-4

Cracks were found in the right engine afterbody on a 35A aircraft with 665 hours of operation. A possible cause may be fatigue induced by thrust reverser operation.

GULFSTREAM AMERICAN

Gulfstream American
Model G-164B

Rudder Spar

The base of the rudder spar was found corroded and rusted, with holes through the tubing spar. The serial number of this aircraft is above the serial numbers covered in Airworthiness Directive 78-08-09. Aircraft total time - 1,200 hours.

HANDLEY PAGE

Handley Page
Model HP-137

Hydraulic Line,
P/N 4322-7

The hydraulic pressure line and the case vent lines chafed until a hole was worn in the hydraulic pressure line, causing a loss of system pressure. These lines were located on the right side, immediately aft of the firewall. Positive separation of the lines by use of clamps should prevent the chafing problem.

LUSCOMBE

Luscombe Model 8A	Fin Attach Fitting	The forward vertical fin attach fitting failed during flight. An examination of the fitting revealed it had been cracked for some period of time. Visual inspection of the fitting is very difficult.

MAULE

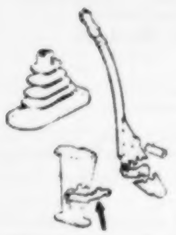
Maule Model M-4 Series (All)	Placards	Two different fuel management placards are used on these aircraft. They read: "Takeoff and landing - left tank only"; and "Takeoff and landing on fullest main tank." On at least one occasion, these placards have been interchanged. Owners, operators, and maintenance personnel should reference Type Certification Data Sheet No. 3A23, Revision 17 (later revision), to insure that the appropriate FAA-approved airplane flight manual is installed in the aircraft, and determine that the correct placard is installed in the aircraft by reference to that manual.

PIPER

Piper Model PA-23-250	Autopilot Problems	If the write-up is "no altitude hold," or "no trim control," usually, the 1/16-inch cable, the roll servo bridle cable, or the trim cables are loose, frayed, broken, or stretched. In this report, the roll servo bridle cable was broken and tangled about the servo. It was observed by looking up at the roll servo from underneath the aircraft. It was reported that when these autopilots have between 800 to 900 hours of operation, the cables start to stretch, fray, or come apart. Personnel performing 100-hour inspections should be especially aware of this area.
Piper Model PA-23-250	Fuel Filter, P/N 460755	A precautionary landing was made due to a strong odor of fuel in the cockpit. Investigation revealed the cabin heater fuel filter, manufactured by Skinner Purifier, had failed. The heater area and some insulation were drenched and fuel was seeping from the aircraft belly seams. Examination of the filter disclosed a crack in the area of the bail attach point. Time on the aircraft - 3,000 hours.
Piper Model PA-23-250	Fuel Line	Investigation of a fuel leak in the right wheel well revealed a wire bundle resting on a fuel line. Vibration during operation caused the bundle to wear the fuel line until a hole developed and a fuel leak resulted. Inspection of the left wheel well on this aircraft, and both wheel wells on another aircraft, revealed the existence of the same chafing conditions.

Piper — Flap Lever Ratchet,
Model PA-24 — P/N 20968-00

The flap lever notched ratchet catch arm was found broken during a nonroutine check. This inspection was made after an in-flight malfunction of the wing flap system. The broken arm had permitted the flaps to fully retract during a full-flap final approach. Total time on the aircraft - 2,010 hours.

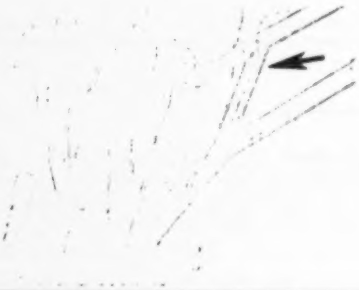


Piper — Gear Cylinder,
Model PA-28-180 — P/N 65319-04

The left main landing gear cylinder strut ears failed during landing. The pilot advised that his flare for touchdown was high, and the landing was hard. Aircraft time - 1,814 hours.

Piper — Link and Brace Assembly,
Model PA-28R-201T — P/N 76426-03

The pilot reported a loud noise and some buffeting of the aircraft when passing through 7,000 feet. The nose gear down light did not illuminate until touchdown during landing. Inspection revealed the right side of the nose gear downlock had broken 3 inches forward of the aft pivot bolt. The submitter advised this was the second identical break found in the past 30 days. Total aircraft time - 343 hours.



Piper — Air Intake Door Assembly,
Model PA-30 — P/N 23809-10

After take-off, the engine lost power, the MAP dropped 1.5 inches Hg, and the engine fuel mixture seemed to be too lean. Subsequent investigation revealed the carburetor alternate air door lying in the carburetor venturi intake, blocking the impact tubes. Further inspection disclosed the door hinge had been worn and was broken off, allowing door to fall into the duct.

Piper — Main Gear Strut,
Model PA-30 — P/N 20750-4

The strut cracked through the web into the inside of the strut. The strut piston caught on the crack and would not extend. Aircraft time - 4,400 hours.

Piper
Model PA-31

Trim Cable,
P/N 42484-03

During an annual inspection, the elevator trim cable was found badly frayed at the trim servo. Fifty percent of the strands were broken.

Piper
Model PA-32R-300

Nose Gear Downlock Arm,
P/N 38078-00

The landing gear indicated an unsafe condition existed. After an attempt to recycle the gear, unsafe light went out and down light came on. Inspection revealed a broken downlock arm. Aircraft total time - 1,691 hours.

Piper
Model PA-34-200T

Nose Baggage Door,
P/N 9691700

The nose baggage door came open during lift-off. The flight was aborted and the aircraft landed straight ahead. An investigation revealed the roll pin that attaches the latch to the external handle was missing. There have been several reports of this nature. The submitter recommends a heavy roll pin secured with safety wire through the pin.

Piper
Model PA-38-112

Fuel Vent Hoses

Reports continue to be received of finding deteriorated vent hoses on low time PA-38 aircraft. An article was published in Alerts No. 14, September 1979, reference deteriorated hoses found in PA-28 and other Piper aircraft.

Airworthiness Directive 79-22-02, Amendment 39-3595, effective October 26, 1979, applies to certain serial numbered PA-28 series aircraft. This AD contains procedures for replacing the hoses to prevent possible fuel leakage and potential fire hazard. The AD does not include the PA-38 aircraft.

If fuel stains are found on the lower part of the wing center section, deteriorated fuel vent hoses could be the cause.

Piper
Model PA-38-112

Ground Terminal Strip

There have been reports of finding loose connections on the ground terminal strip. The strip is on the right side, at fuselage station 50, adjacent to the voltage regulator. Airworthiness Directive 79-17-05 and Piper Service Bulletin 603 do not relate to this subject. The serial numbers of the five reported aircraft are above those cited in the AD and service bulletin.

Piper (Aerostar)
Model 600

Link Assembly,
P/N 400076

The right main landing gear lower torque link broke during roll-out after landing. The break appeared to have progressed from a crack that started about 1 inch from the single hole. Total aircraft time - 1,480 hours.

SIKORSKY

Sikorsky Model S-76	Hub Sub-assembly, P/N 76103-08010-043	During a routine preflight inspection, a crack was found in the main rotor hub sub-assembly. The crack originated between center of the red and blue blade attach points. The crack was 1½ inches long on the outside of the hub, and continued through the hub with a 2-inch-long crack on the inside of the hub. Total aircraft time - 96 hours.
Sikorsky Model CH-19E	Main Rotor Support Assembly	During a landing flare, the transmission and main rotor separated from the aircraft and came to rest 68 feet from the fuselage. Both lugs, which attach the transmission support mount to the front of the transmission, had broken. The lug fittings revealed conclusive evidence of previous cracks. At the time of the report, it had not been determined if Airworthiness Directive 54-16-01 had been accomplished on this aircraft.

SWEARINGEN

Swearingen Model SA226-TC	Hydraulic Tube, P/N 27-81006-769	The aircraft lost hydraulic fluid. An investigation disclosed the hydraulic tube assembly between wing station 51.16 and 66.58 had chafed through from contact with the cooling turbine.
Swearingen Model SA226-TC	Rear Spar	During compliance with the repetitive portion of Airworthiness Directive 74-24-02, the left horizontal stabilizer rear spar and aluminum doubler were found cracked at the outboard elevator hinge fitting. The AD had originally been complied with in November 1974, at 1,604 aircraft hours. Total aircraft time - 12,817 hours.

UNIVAIR

Univair (Ercoupe) Model 415-C	Wing Structure

The wings of this aircraft were covered with a dacron material on July 16, 1969. No inspection panels were provided. The owner complained of a creaking noise in the wings when the wings were flexed. In November 1979 the wings were opened and trash and rodent residue was found in both. There was extensive corrosion of the aluminum structure. Both spars of the left wing had areas completely corroded away. The right wing had extensive corrosion of the leading edge tip area. Rodent entrance was apparently through the cut out in the aileron gap for the pitot/static lines. The aircraft had operated 259 hours between July 1969 and November 1979. Both wings were replaced and inspection panels were provided in the covering of the replacement wings.

ACCESSORIES

BENDIX

Bendix Magneto Model S6LN-25	Distributor Gear, P/N 10-157197	The engine was running smoothly while on the ground, but became rough during takeoff. An investigation revealed teeth badly worn on the distributor gear. The engine was a Continental TSIO-360-GB in a Mooney M20K. Total time on the part - 102 hours.

PURITAN-BENNETT

Puritan-Bennett Aero Systems Co. Oxygen Regulator Models 112140, 112145, and 112146 Series	Injector Plate	A few subject regulator assemblies have developed slight stress cracks in the injector plate. This condition has, in some cases, caused a very slight leak and can partially deplete the crew oxygen system. The manufacturer should be contacted for replacement of the injector plate. If this condition is found, please submit a Malfunction or Defect Report to your GADO.

SLICK

Slick Magneto Model 4001	Broken Spring	A Continental O-200-A engine was replaced because of metal in the oil screen from a failed alternator driveshaft. Tear down of the engine disclosed the outer rolled end of the impulse coupling spring had broken, and had fallen into the gears, which caused failure of the alternator shaft.

INSTRUMENTS

AERO MECHANISM

Aero Mech	Altimeter, P/N 8140B-20	A mechanic noticed the 100-foot pointer striking the glass on a new encoding altimeter he was preparing to install. The pointer was either loose on the shaft or the gears were misengaged in the barometric set mechanism. The unit was returned.

NO INVESTMENT PAYS BETTER DIVIDENDS THAN SAFETY.

ENGINES

CONTINENTAL

Continental
Model TSIO-520-N

Crankcase

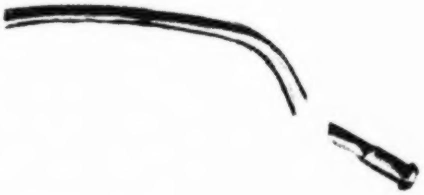
An abnormal amount of oil was found in the cowling of a Cessna 402C during an inspection. Cracks were found on the No. 5 cylinder pad of the case. A 1 1/8-inch crack was at the top stud forward location, and a 2-inch crack at the lower stud. Airworthiness Directive 77-13-22 does not include this engine serial number. Engine total time - 925 hours.

A similar article and picture appeared on page 11 of Alert No. 11, June 1979.

Continental
Model GTSIO-520-M

Fuel Tube,
P/N 641486

The fuel tube to the No. 6 cylinder cracked near the end fitting to the valve. The break was probably caused by vibration as there were no tube clamps installed. A thorough acceptance inspection of new aircraft and engines is recommended. Total engine time - 27 hours.



LYCOMING

Lycoming
Model IO-360-A1A

Crankshaft

The pilot reported the propeller and spinner departed the aircraft during aerobatic training. The aircraft was landed with no further damage.

An investigation revealed the crankshaft flange had broken through at the lightening holes. Rust on the cracked surface indicated approximately 50 percent of the failed section had been cracked previously. The engine had been overhauled 417 hours previously, and was on a Model S-2A Pitts.

MAINTENANCE NOTE

CABLE END FITTINGS

This is not a new subject, but improperly assembled terminal ends on flight control cables and bracing cables continue to fail with tragic results. Too often, the oval sleeves (Nicopress or other process) simply are not crimped properly. These methods of assembling cables can be relied on to their design limits, but only when proper fabrication techniques are used. The product manufacturer's instructions should be followed carefully. Advisory Circular 43.13-1B also provides acceptable techniques.

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APRIL 1980

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TD 4.414:

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ADVISORY CIRCULAR
AC 43-16

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, D.C. 20590

GENERAL AVIATION AIRWORTHINESS ALERTS

APRIL 1980

FLIGHT STANDARDS NATIONAL FIELD OFFICE
MIKE MONRONEY AERONAUTICAL CENTER

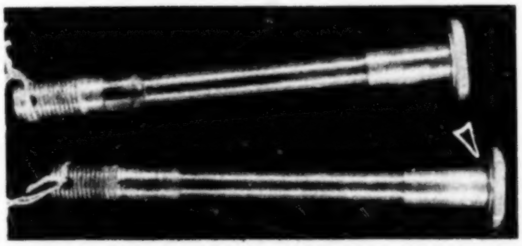
The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported to be significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: Flight Standards National Field Office, Attn: AFO-580, P. O. Box 25082, Oklahoma City, Oklahoma 73125.

AIRCRAFT

AEROSPATIALE

Aerospatiale Model SA-315A	Main Rotor Head, P/N M-2144

During major component overhaul, two of three bolts that hold the main rotor head flapping hinge to the main fitting were found cracked in the radius of the bolt heads. The cracks were found during magnaflux inspection; however, one crack was visible to the naked eye.



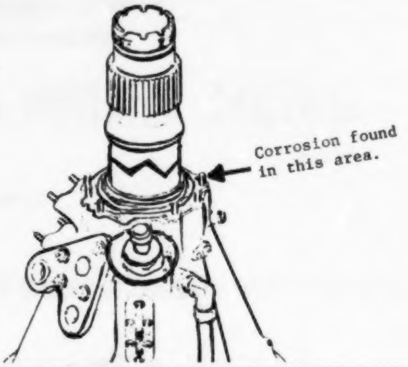
NOTICE TO READERS: The General Aviation Airworthiness Alerts are, for the most part, prepared from information supplied by those who operate and maintain aircraft. The FAA encourages the reporting of all malfunctions or defects that come to the attention of service or operating personnel, even though the problem has been previously reported. The Malfunction or Defect Report, FAA Form 8010-4, which supersedes Form 8330-2, is available from the local General Aviation District Office, and may be used for reporting purposes.

AGUSTA

Agusta
Model A109A

Main Rotor Mast,
P/N 209-0405-76-1

There have been several reports of finding corrosion and pitting in the mast area of the inner bearing race. This condition was found during compliance with Agusta Service Bulletin 109-12, Part 2. Agusta has issued instructions relative to applying a corrosion preventative compound to the area.



Corrosion found in this area.

BEECH

Beech Models 19/23 Series	Wings	During inspection, maintenance found left and right wings wrinkled. It was determined that these wings were designed for Models 19 and 23 series airplanes that were not certified in the acrobatic category. Further investigation disclosed that wings on all acrobatic Models 19 and 23 series airplanes built in 1969 and later have a beef-up kit installed in the wing leading edge. However, all the wings, whether modified or not, have the same part number. This makes identification without inspection impossible. To determine if a wing has been modified, a visual inspection may be made, through the wing inspection plates, for presence of a leading edge doubler. Beech recommends any wing replacements on Models 19/23 series aircraft be preceded with a telephone call to Beech Aircraft Company.
Beech Model K35	Mounting Bolt	The alternator was found loose during a preflight inspection. Further investigation revealed the lower alternator mount bolt was sheared. It was reported that this was the third such occurrence since installation of the alternator in place of the original generator under STC SA 334 SW. Part total time - 19 hours.
Beech Model 77	Fuel Tank Vent Tube	During a recent delivery flight, the crew was unable to use fuel from the left tank. An extensive investigation of the fuel system revealed the left tank vent tube was twisted 30 degrees from the required facing position.

SAFETY IS THE RESPONSIBILITY OF EVERYONE IN AVIATION

Beech
Model 99 Series

Rudder Trim Tab Horn
Assembly, P/N 96-630000-217

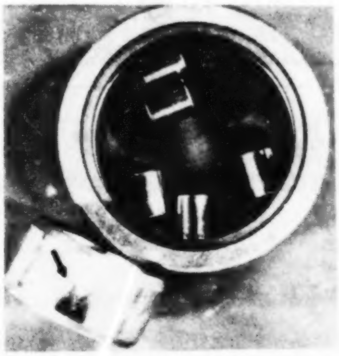
Intergranular corrosion was the cause of the rudder trim tab horn failing in flight. An examination of the horn assembly revealed that the corrosion formed around the horn bearing seat area. Beechcraft Airliner Communique No. 68, dated May 18, 1979, suggests that owner/operators perform an immediate inspection of the rudder trim tab and horn assembly for evidence of corrosion. If corrosion exists, the parts must be replaced.

BELL

Bell
Model 47G-3B-1

Bearing,
P/N 47-120-190-5

Slight vibration was reported in the main rotor system. During the 600 hour inspection, the gimble ring was opened and the pillow block bearing inspected. Inspection of the bearing revealed brinelling on the inner race, roller, and outer race.

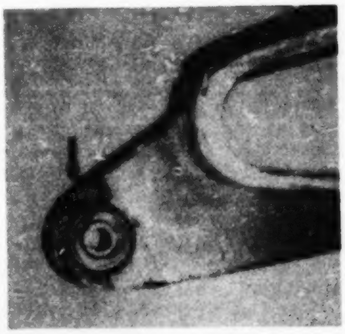


BELLANCA

Bellanca
Model 7ECA

Aileron Attach Fitting,
P/N 3-528

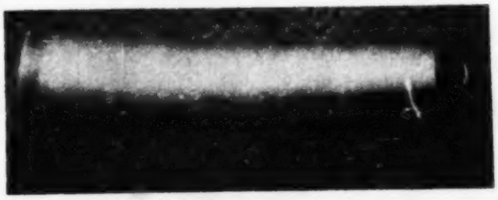
The right inboard aileron attach bracket was found cracked through the bearing stake point. Aircraft total time - 40 hours.



Bellanca
Model 8KCAB

Fuel Line,
P/N 7-1414-2

The fuel line between the rear fuselage manifold and the header tank was partially cut when the plastic line covering was apparently trimmed with a tubing cutter. The fuel line developed a leak, at the cut, at 370 total aircraft hours.



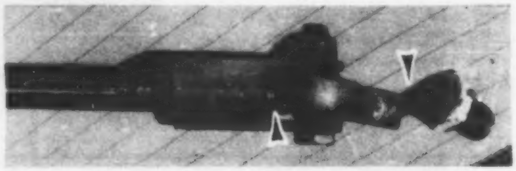
BOEING

Boeing Model 75 Series (Stearman)	Wood Control Stick Assembly, P/N 75-3362	An accident occurred after the wood control stick in the rear cockpit broke during flight. The failure occurred in the area between the retaining bolt and the upper end of the socket assembly. The broken control stick was made of walnut. Boeing drawings specify that only hickory should be used; preferably a straight grained solid piece of wood. However, 3/16-inch laminated stock is also acceptable for use in fabricating a replacement control stick. An aluminum control stick, P/N 75-3347, is interchangeable with the wood control stick.

CESSNA

Cessna Single-Engine Aircraft	Fuel Tank Quick Drain Valves	Accidents and incidents continue to occur because water, which is trapped in the fuel system, is not completely drained. Quick drain valves are available for all Cessna single-engine aircraft which do not now have them installed. These valves make the task of draining water from the fuel tanks much easier and faster. Cessna Service Letter No. SE69-15 contains complete information regarding this subject.
Cessna Model 152	Nose Steering Tube, P/N 0543022-3	

During landing, the left nose gear steering tube broke at the clevis jam nut. The aircraft veered right, and almost nosed down. An investigation disclosed the threaded portion of the tube passing through the clevis, P/N 0543023, was contacting the bearing, and causing the bearing to bind. Contact of the steering tube against the bearing prevented free movement of the bearing, which resulted in a bending force on the threaded portion of the fitting. Apparently, there is no stop or blind hole to prevent the steering tube from being adjusted against the bearing. The steering tubes should be inspected for freedom of movement, proper lubrication, etc., each 100 hours or every 12 months, as per the maintenance manual. Total time on the aircraft - 1,193 hours.



Cessna Single-Engine Aircraft and Models 336 and 337 Series (except 120 and 140)	Vented Fuel Caps	Reports are being received of engine stoppage during flight, after switching fuel tanks. Maintenance personnel complying with Airworthiness Directive 79-10-14 are reminded that the vented fuel caps are required as a secondary vent only. As such, the vented fuel caps are set to operate at a 4 inch H_2O differential pressure. If fuel feed problems persist, it is recommended that the primary vent system be inspected per the Cessna service manual for the particular airplane to determine the cause of the problem.

Cessna
Model 177RG

Main Landing Gear Actuator
Rod End Bearing

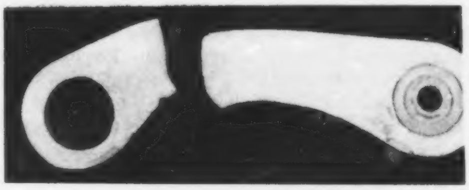
Numerous reports of failed main landing gear actuator rod end bearings have been received over the past several years. These failures include the original P/N S2049-6FG rod end and a replacement part (P/N S2049M6FG), which was installed on production airplane S/N 177RG0963 and after.

Cessna has issued Service Information Letter No. SE79-37, which announces the availability of a new high-strength rod end to replace both of the earlier part numbers. This new rod end is identified by P/N S2426-6. It is recommended that the improved rod end be installed at or before the next annual inspection.

Cessna
Model TU206G

Steering Link,
P/N 1243018-1

The steering link broke during taxi, which resulted in severe shimmy and inability to steer the aircraft. There was no indication of an existing crack before the link broke. Part total time - 577 hours.



CESSNA MODELS 310, 320 AND 400 SERIES AIRCRAFT--RUDDER PEDAL TORQUE TUBE ASSEMBLY

Bending and breakage of the rudder pedal posts and control cable attach arms welded to the rudder pedal torque tubes continue to be reported. Airplanes manufactured prior to March 1970 are particularly susceptible to this type problem. Affected part numbers are:

Models 310 and 320 - P/N's 0813018-1 and -2; 0861700-1 and -2; and
Model 400 Series - P/N's 5015006-7, -8 and -9; 5115260-1 and -4.

It is recommended these torque tubes be carefully examined for deformation or cracks in the welded area during regularly scheduled inspections. Removal of the cabin floorboards is necessary to properly accomplish this inspection.

Cessna Service Letter No. ME71-1 announced that a strengthened torque tube had been developed for inclusion in production 400 series aircraft and for use as spares. This service letter also provided instructions for the modification of existing torque tubes. In March 1970, a reinforcing sleeve was added to the torque tubes used on Model 310 production aircraft and spares. A modification similar to that described in Service Letter ME71-1 can be added to the torque tubes originally installed in early Model 310 and 320 airplanes.

Cessna
Model 402B

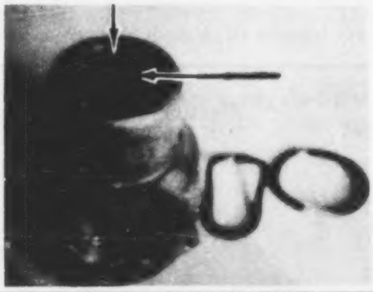
Output Gear,
P/N 0843400-10

An abnormal noise was observed when the landing gear was extended. An investigation revealed the teeth were stripped from the output gear in the reduction unit where it splines with the main landing gear actuator gear box assembly. Total time on the aircraft - 1,623 hours.

Cessna
Models 404 and 421C

Hydraulic Actuator,
P/N 9910136-3

Rust forms in the end cap and the "O" rings roll and break apart. The submitter advised of eight units removed from C-404 aircraft because of this problem. Cessna Multi-Engine Service Letter ME76-14, Supplement No. 2, dated March 14, 1977, pertains to the subject.



Cessna
Model 421B

Rod End,
P/N HM-5

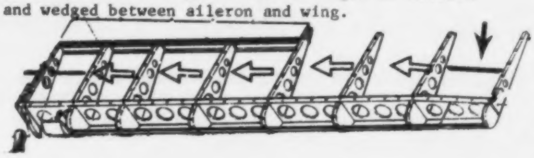
The aircraft, which has a Robertson STOL conversion, was being given a 100-hour inspection. While the flaps were being extended, the rod end on the inboard end of the right flap drive pushrod broke. The rod end broke through the shank about 1 inch from the center of the ball. The rod end had an internal threaded hole through the end of the shank, which left about 1/16-inch wall thickness at the threaded section. It is recommended that aircraft with Robertson STOL conversions be inspected for similar condition.

Cessna
Model 421C

Aileron Assembly

The aileron locked during taxi and the aircraft returned to the ramp. An investigation disclosed that a spanwise stiffener in the lower outboard bay of the aileron bay had become unbonded from the aileron skin. The loose metal stiffener traveled the length of the aileron, exited through a lightening hole, and restricted aileron travel. Total aircraft time - 609 hours.

Skin stiffener let go, traveled length of aileron and wedged between aileron and wing.



Cessna
Model 441

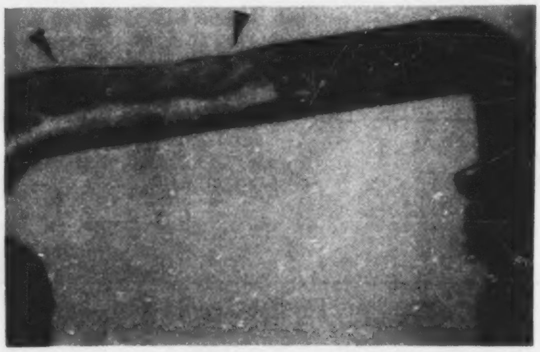
Chafed Lines

The lower engine cowl chafed against the oil return line and the bleed air line. This condition was found on both engines on four aircraft.

Cessna
Model 500

Fuel Line

During an inspection, the main fuel line was found dented. There was no record of previous aircraft damage.



Cessna
Models 550
and 551

Elevator Cable,
P/N 6565007-3

The elevator control system forward left cable, installed in a number of new aircraft, was inadvertently manufactured using cable with Monokore strand instead of the standard 7 x 19 extra flexible cable.

Cessna has issued Citation II Service Bulletin No. SB550-27-3 pertaining to the replacement of this specific cable. Airplanes affected are S/N's 550-0069 through 550-0106.

ENSTROM

Enstrom
Model F-28C

Bearing

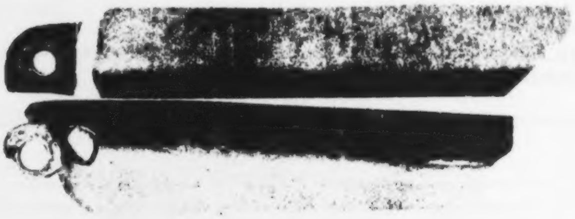
An unusual noise was observed during ground run-up. Roughness was felt when the tail rotor was pulled through. Further investigation revealed the tail rotor drive shaft rotated inside the bearing rubber bushing, and the bearing balls were frozen to the bearing inner and outer races. Total aircraft time - 66 hours.

FAIRCHILD INDUSTRIES

Fairchild Hiller
Model 1100

Bracket,
P/N 24-23207-7 and -8

The transmission oil filter brackets were found broken during a routine inspection.



GATES LEARJET

Gates Learjet
All Models

Aircraft Towing

An attempt to tow an aircraft with the parking brake engaged resulted in substantial damage. Cracks were found in the forward bulkhead and the glareshield in addition to severe damage to the nose gear strut and actuator.

Prior to towing any aircraft, ground personnel should insure that the parking brake is released, and that cables, tiedowns, wheel chocks, and APU connections are removed or disconnected.

Gates Learjet
Certain Aircraft

Aileron Center Hinge Bolt
and Bushing Inspection

The following information is contained in Gates Learjet Service News Letter No. 44, dated November/December 1979:

> "It was recently discovered that several aircraft were missing an aileron center hinge bushing (P/N 2424033-17), and that the possibility existed that hinge bolts (AN4H13A) of the wrong grip length being installed. The parts catalogs presently do not illustrate the 2424033-17 bushing, and will be changed to do so at the next scheduled revision.
>
> "It is suggested that during the next 1,200-hour inspection, a check should be made to verify the 2424033-17 bushing is installed, is properly secured, and the aileron bolt is of the proper grip length. This inspection is required on all models. Effectivity of the bushing installation is as follows:
>
> 24-353 and on
> 25-230 and on
> 28-001 and on
> 29-001 and on
> 35-135 and on
> 36-035 and on
> and all aircraft that have installed replacement
> Aileron Kit 2392011-( ) per SSK 938."

Gates Learjet Models 23, 24 and 25	**12-Ply, 210 MPH Tires**	**Information contained in Gates Learjet Service News Letter No. 40, dated June 1979, states that the 12-ply, 210 m.p.h. tires used on Learjet Models 35/36 may also be used on other Learjet models, PROVIDED all four main gear tires are replaced. Mixed installation of 12-ply and 10-ply tires is not recommended due to a small difference in the overall diameter of the tires.**

Gates Learjet Models 23, 24, 25, 35 and 36	Aileron Control Cable Idler Pulleys

The following information is contained in Gates Learjet Service News Letter No. 20, dated July 1977:

> "All owners and operators of the subject aircraft are reminded of the availability of Airplane Modification Kit No. AMK77-1. This kit, when installed, is designed to reduce aileron control cable wear at the fairleads. Gates Learjet recommends the kit be installed no later than the next 600 flight hours."

Aircraft serial numbers affected: 23-003 through 23-099; 24-100 through 24-328; 25-003 through 25-224; 35-001 through 35-115; 36-001 through 36-032.

There have been several recent reports of finding aileron cables frayed and strands broken.

GULFSTREAM AMERICAN

Gulfstream American Model AA-5 (Australian Registry)	Stabilator Skin Bonding	During a preflight inspection, all of the left stabilator skin and two-thirds of the right skin was found to have failed bonding. The operator did not possess the correct tow bar, so personnel normally turned the aircraft by pressing down on the stabilator top surface, thus overloading the bonded areas. Warnings against this practice are contained in service and pilot's manuals. Aircraft time since new - 895 hours.

HUGHES

Hughes Model 269A	Heater Extension Tube, P/N 486238	During a 100-hour inspection, the heater extension tube was found burned out and loose inside the stainless steel shroud. If the extension tube completely deteriorates, the outer stainless shroud could fall free and possibly jam the controls or tail rotor. The heater was a Stewart Warner Model 940 with 291 hours total time.
Hughes Model 269C	Strut Assembly, P/N 269A3119	The right landing skid strut assembly was removed because of uneven skids. Corrosion and water were found inside the tube. It was suggested that a sealant be placed around the rod ends to prevent the entrance of water.

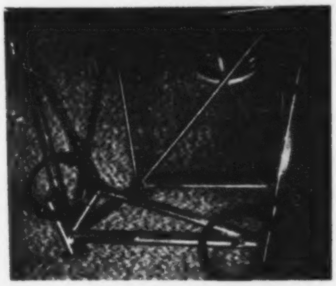
NO INVESTMENT PAYS BETTER DIVIDENDS THAN SAFETY.

PIPER

Piper
Model PA-23-250

Engine Mount,
P/N 31215-00

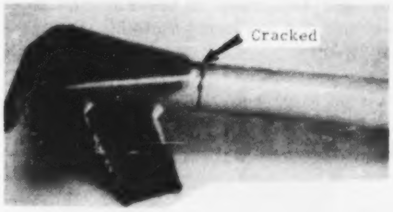
There were large holes in the bottom three engine mount tubes. Rust had completely deteriorated the tubing wall. The engine mount serial number is 6-26-67. Airworthiness Directive 68-07-04 pertains to this part number mount, but not to the damage caused by rust. This was the second badly rusted mount found recently by one repair station.



Piper
Model PA-23-250

Tube Assembly,
P/N 17420-00

The tube assembly, on the outboard side of the left main landing gear, was found cracked at the aft end near the welded brackets. The crack was approximately 300 degrees around the tube. Aircraft time - 3,320 hours.



Piper
Model PA-28-161

Battery Box Lid

During flight, the passenger seat became shorted to the battery terminal. The seat caught on fire with flames approximately a foot high. A passenger stopped the fire with a jacket, and the aircraft landed without further damage. An investigation revealed the cover had come off the battery box, which is located under the passenger seat, and allowed the passenger seat to short on the battery terminal. Similar article appeared on page 6 of Alerts No. 10, May 1979.

Piper
Model PA-28R-200

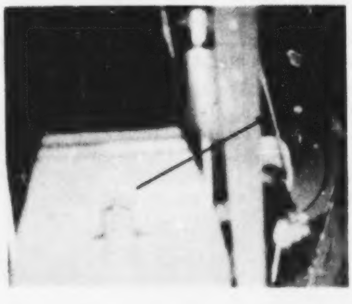
Main Gear Trunnion Assembly, P/N G7926-04, and -05

During an annual inspection, both main landing gear trunnion assemblies were found cracked in the web area where the brake line is secured by a clamp and bolt. This area is not readily visible without removal of the clamp and installation hardware. Aircraft time in service - 1,806 hours.

Piper
Model PA-31-350

Rudder Cable

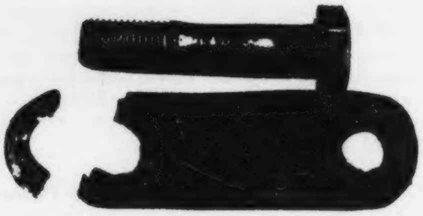
The pilot's right rudder cable was found routed on the wrong side of the right steering push-pull rod. This was found during an acceptance inspection of a new aircraft.



Piper
Model PA-32-300

Alternator Strut,
P/N 78483-00

The alternator broke loose during flight. This was the factory installed kit No. 760-742. Total part time - 366 hours.

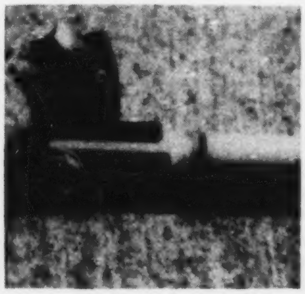


Piper (Aerostar)
Model 601P

Bellcrank, MLG Door,
P/N 400008-1 and -2

There have been many reports of broken bellcranks. Incorrect system rigging may be contributing to the problem. One operator suspects the part is too weak for the listed main landing gear down speed.

NOTE: Door and bellcrank improvements have been developed and are being tested by Piper Aircraft Corporation.



SWEARINGEN

Swearingen
Model SA226-TC

Tube Assembly,
P/N 27-81637-43

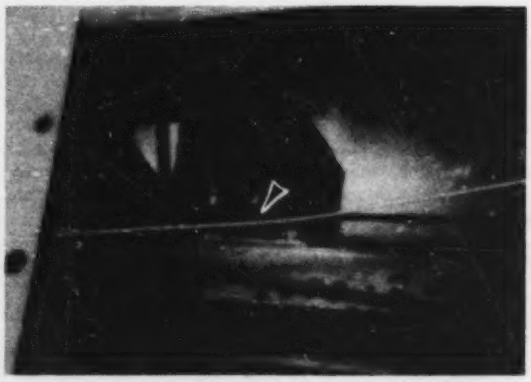
The aircraft returned and landed after the gear would not retract after takeoff. An investigation disclosed the hydraulic line to the accumulator had broken at the flare. The operator has had three previous failures of this hydraulic line.

VARGA

Varga (Morrisey)
Model 2150A

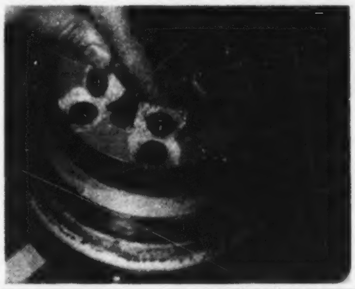
Rudder Cable

After the aircraft was in windy conditions on the ground, the rudder was found locked to the left. The rudder cable was caught over one of the rudder ballast mount bolts. This condition could possibly occur during flight. Airworthiness Directive 80-02-08, applicable to Varga Models 2150 and 2150A, has been issued. The AD specifies removing the two bolts attaching the rudder balance weight and reinstalling the bolts head downward. Compliance required within 10 hours time in service from the effective date of the AD, which was January 21, 1980.



AIRFRAME COMPONENTS

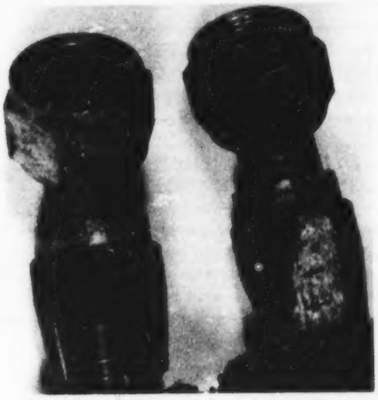
CLEVELAND



Cleveland	Main Wheel, P/N 40-131

The PA-23-250 landed with the left main tire flat. An investigation found the inboard half of the left wheel broken. Two of the six anchor nuts had broken through the wheel, and there were cracks around the other four anchor nuts.

AEROQUIP

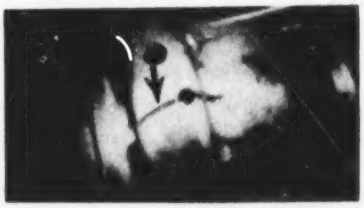


Aeroquip	Hose Assemblies, P/N 050-624-181M0356

Cracked main fuel line fittings have been found on two separate engine installations on an L-188 aircraft. The dissimilar metals of the fitting socket and the braided line appear to have enduced corrosion, which eventually cracked the socket. It is recommended that other operators with this type hose check the fittings for defects. The socket is normally covered with the fire resistant sleeve which makes the defect difficult to detect.

ACCESSORIES

BENDIX



Bendix Magneto Model S6RN-1225	Case

There have been several reports of finding the magneto case cracked, as in the picture. Average time for the most recent reports - 680 hours.

Bendix	Ignition Switch, P/N 10-357-200	The engine fired when the propeller was pulled through by hand. The ignition key was in the pilot's pocket. The right mag was still "hot." An investigation revealed the key could be removed from the switch before the switch was into the "off" position detent. This was on a C-182P, and was the second such incident in 2 months. Airworthiness Directive 76-07-12 does not pertain to this particular problem.

PRESTOLITE

Prestolite Starter MHB 4015	Retain Screw	The oil seal retainer screw came out and shorted the armature to the case. High current flow welded the starter solenoid contacts and the master switch contacts. There have been many reports of bearing seal retain screw being loose or out and shorting the armature on this model starter.

ENGINES

AIRESEARCH

Airesearch Model TPE 331-3U	Oil Inlet Tube, P/N 896982-1

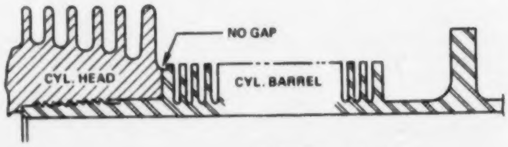
The right engine oil pressure went to zero during taxi from the gate. An investigation revealed a broken oil inlet tube. The tube runs from the oil scavenge pump to the rear engine bearing. Oil was being blown out the engine tailpipe. This was a manufacturer modified oil inlet tube.

CONTINENTAL

Continental Model GO-300 Series	Cylinder Assemblies

Some Teledyne Continental GO-300 engines may have improper cylinders installed. Continental Service Bulletin M63-1 states the A50222 cylinders are NOT TO BE USED on the GO-300 engines.

The A50222 cylinder assemblies do not have a gap between the top cylinder fin and the head, as the head seats on the top cylinder fin.



PART NO. A50222

Continental
Models IO/TSIO-520
and GTSIO-520 Engines
with Gear-Driven
Alternators

Alternator and Drive Coupling

While investigating the failure of the alternator, Model ALV9407, the mechanic found that the alternator gear-driven hub assembly, P/N 640933, had failed. This failure caused the crankshaft gear to break, making it necessary to disassemble the engine for major repair. The alternator drive shaft was also bent. The mechanic stated that only one of three replacement hub assemblies in his possession was marked with the assembly number. Hub assemblies for geared engines are designed to turn the opposite direction than those for direct drive engines, and have different assembly numbers. Although they appear identical, the wrong assembly can be installed, and may even appear to be operating properly if the alternator is lightly loaded.

Repeating - installation of the wrong hub assembly may not be immediately apparent. Although they are NOT functionally interchangeable, they can be physically interchanged. The assembly number may not be on the hub assembly. If not, check the container (box). It should show the number. Continental Aircraft Engine Service Bulletin M76-23 relates to this subject.

MAINTENANCE NOTE

VERTICAL STABILIZER DECALS

An investigation of a VOR system with decals located within 2 or 3 feet of the VOR antennas has revealed the decals can cause "scalloping" of the instrument readings due to static electricity buildup on the surface of the decal. It is recommended that decals (flags, logos, etc.) be removed and the design painted on the surface to prevent this from occurring.

SOMETHING TO THINK ABOUT

OLD FLARES

On occasion, parachute flares are still being found installed in general aviation aircraft. Recently, a flare rack on a Cessna Model 195 was found fully loaded with three flares. They were Mark 1, Mod 1, $1\frac{1}{2}$ minute parachute flares, certified under the Department of Commerce, CAATC No. 15, Class 2, P.C. No. 56. They were manufactured by Kilgore Manufacturing Company, International Flare Signal Division, Waterville, Ohio, with a manufacture date of July 23, 1950.

Initial inspection of the flares showed that the canisters were intact, with no apparent leakage. After removal, all canisters showed evidence of oxidation. The center flare showed a dark brownish discoloration in a small area about 6 inches from the top end.

After contacting several sources for information about safe handling of the flares, two precautions were suggested: (1) do not force the canisters, and (2) insulate the electrical leads to prevent any inadvertent shorting.

After removing the strap clamp on the first flare, it would not budge. Subsequently, rivets were drilled out of the flange mounting to the aircraft skin, and the flange and flare came out as a unit. Inspection revealed that the flange collar and the flare canister had bonded together. The other two flanges were also drilled out, and each flare and flange collar was removed as a complete unit. Both of the other flares were also bonded together. An air drill was used to drill out the flanges to minimize the possibility of electrical sparking.

Do you know of an aircraft that may still have old flares installed?

THE MOST VALUABLE GIFT YOU CAN GIVE ANOTHER IS A GOOD EXAMPLE.

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AC 43-16

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, D.C. 20590

GENERAL AVIATION AIRWORTHINESS ALERTS

MAY 1980

FLIGHT STANDARDS NATIONAL FIELD OFFICE
MIKE MONRONEY AERONAUTICAL CENTER

The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported to be significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: Flight Standards National Field Office, Attn: AFO-580, P. O. Box 25082, Oklahoma City, Oklahoma 73125.

AIRCRAFT

AGUSTA

Agusta Model A-109A — Mount Assembly

A crack, from the top to the bottom, was found in the nose landing gear strut upper mount assembly. This mount was reported to be the new, improved forging, per Agusta Bulletin 109-14. Total time on the part - 85 hours.

NOTICE TO READERS: The General Aviation Airworthiness Alerts are, for the most part, prepared from information supplied by those who operate and maintain aircraft. The FAA encourages the reporting of all malfunctions or defects that come to the attention of service or operating personnel, even though the problem has been previously reported. The Malfunction or Defect Report, FAA Form 8010-4, which supersedes Form 8330-2, is available from the local General Aviation District Office, and may be used for reporting purposes.

AYRES

Ayers
Model S2R

Tail Wire Bracket

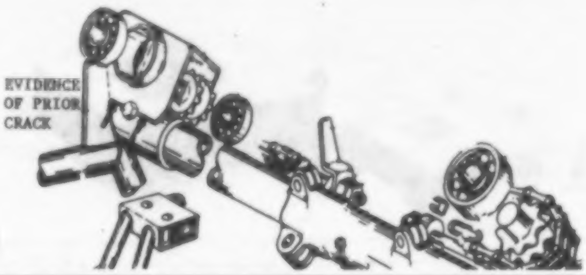
The bracket on the vertical fin was found broken during an annual inspection. Fabric was holding the broken bracket in place. The submitter advised that this was the third broken bracket found on low time aircraft in the past 6 months.

BEECH

Beech
Model E18S

Bracket

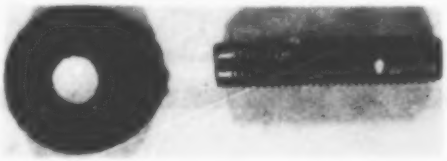
The bracket separated during gear retraction, which caused the landing gear to malfunction. An examination revealed a crack existed prior to separation. Aircraft time - 11,000 hours.



Beech
Model B19

Aileron Rod End

Lack of lubrication was reported as the cause for the forward aileron rod end failure. The aileron must be removed to inspect and lubricate the rod end. Beech Service Instruction No. 0858-151 relates to the subject.



Beech
Model V35B

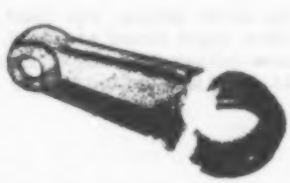
Braze Assembly Rod,
P/N 35-815125-602

The left braze assembly rod was hitting the actuating retract arm, P/N 45-810090, when in the up and locked position. The braze assembly rod was found cracked at the lower stamping and the unit was twisted from the end of the rod to the bearing. Total aircraft time - 111 hours.

Beech
Model 95-55

Landing Gear Idler Arm,
P/N 55-826174

The arm broke during gear retraction, and caused the gear to jam in mid position. Aircraft manufactured in 1961.



Beech
Model 95-B55

Tube Fitting

There was no oil pressure indication during engine start. Oil was found dripping out of the left wing root fairing. The fairing was removed and the AN 837 elbow through the fuselage was found broken. Overtorque of the fitting jam nut may have contributed to the break. Aircraft time - 1,170 hours.

BELL

Bell
Model 47G
(Soloy Conversion)

Fuel Vent Valve,
P/N 47-682-226-1

After depletion of the fuel in the right tank, fuel could not be fed from the left tank. An investigation revealed the breakaway valve, installed by Service Instruction 436, Kit 47-706-141-1, had closed. It is believed that while covering or uncovering the helicopter with a tarpaulin, the fuel valve line flexed and the flapper closed.

Bell
Model 47G-2

Bolt,
P/N 47-641-194-001

The pilot felt a vibration when he lifted off for taxi. The helicopter was set down without incident. An investigation disclosed the tail rotor blade retaining bolt had broken and one blade had departed the aircraft. There were indications that the bolt head had been fretting on the bearing and the cotter pin had sheared.

Airworthiness Directive 76-12-01 had been complied with.

Bell
Model 47G-3B-1

Bearing,
P/N 47-661-032-1

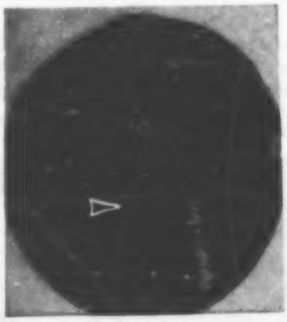
During engine change, excessive play was observed in the engine cooling fan. Disassembly revealed the bearing grease seal loose, the bearing cage broken in many pieces, and the ball bearings were loose. There had been no pilot reports of noise or vibration. It was recommended that the belt tension be released and the bearing checked for roughness and play at each 50-hour inspection.

BELLANCA

Bellanca
Model 7ECA

Cable Attach Bolt

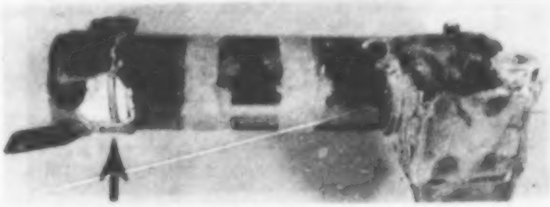
The nut on the left aileron bellcrank cable attach bolt was found finger tight. A thorough acceptance inspection of aircraft and engines is most important. Total aircraft time - 40 hours.



Bellanca
Model 17-30A

Main Gear Upper Leg,
P/N 194280-40

The right upper leg broke during landing. This was not reported as a hard or unusual landing. Part total time - 329 hours.



CESSNA

Cessna
Model 172K

Carburetor Air Box

A rubber plug in an assembly hole deteriorated and was injested into the carburetor. The plug lodged between the outside of the venturi and the carburetor wall. The lodged plug caused a loss of power at full throttle setting.

Cessna
Models R172K (Hawk XP), 180, 182, 185 and 188 Series

Engine Mount

There has been a continuing problem with corrosion on those portions of the engine mounts which are exposed to heat from adjacent exhaust stacks. Cessna has issued Single-Engine Service Letter No. SE76-22, dated November 15, 1976, which suggests that a very high temperature enamel be applied to the areas of the engine mounts which are in close proximity to the exhaust stacks. This enamel is identified by Cessna P/N CES1054-812S.

Although the service letter specifically mentions the Model A185 and A188 series airplanes with the 300 hp engine, it is recommended the enamel be used on any airplane where corrosion of the engine mounts is accelerated by elevated temperatures.

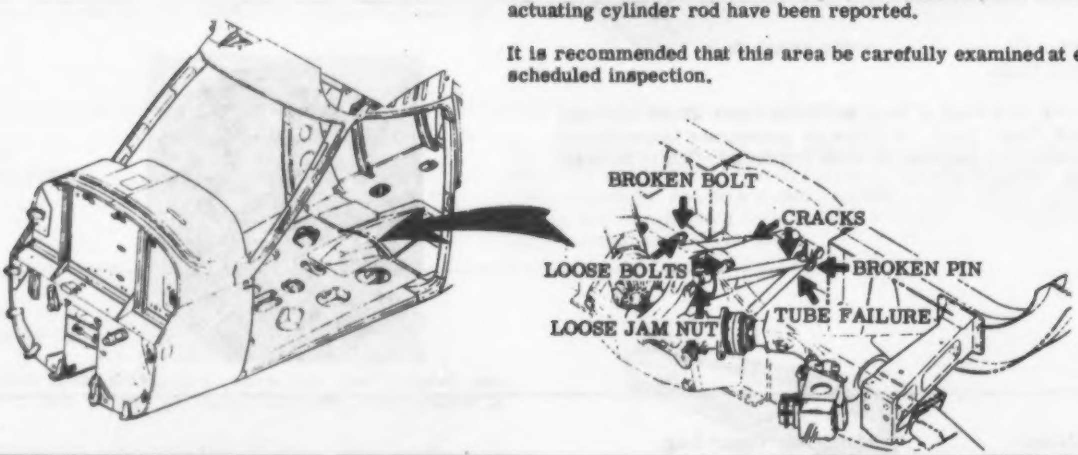
Cessna Single-Engine Service Letter SE78-27 was issued on April 24, 1978, to provide instructions for the use of the very high temperature enamel on the engine mounts of the Hawk XP series airplanes.

Cessna
Model 177RG

Main Landing Gear Actuator Support Assembly

Several reports of various problems found in the area of the main gear actuator have been received. Such things as loose or broken support assembly attach bolts, cracked or broken support tubes, a broken P/N 2041020-2 pin, and a loose jam nut on the actuating cylinder rod have been reported.

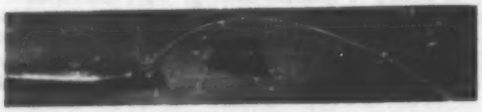
It is recommended that this area be carefully examined at each scheduled inspection.



Cessna
Model P210

Line Assembly, P/N 1280509-91

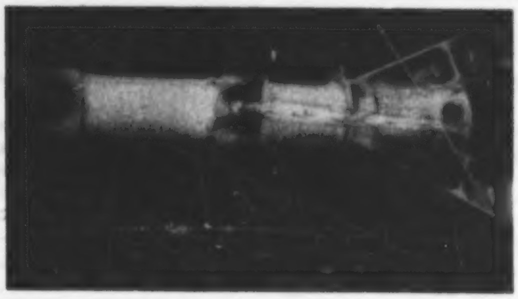
The line pulled out of the coupling nut and sleeve at the hydraulic power pack. There was no evidence of a flare remaining on the line or under the coupling nut. Total aircraft time - 101 hours.



Cessna
Models 300/400
Series (except 402C,
404, 414A, and 441

Strut,
P/N 5041102-497

The pilot noticed hydraulic fluid seeping from a crack just below the retract fitting on the right strut. Frequent and thorough inspection of applicable high time aircraft is recommended. Total time on this aircraft - 4, 059 hours.



Cessna
Models 336/337
& SE aircraft

Fuel Tank Vents

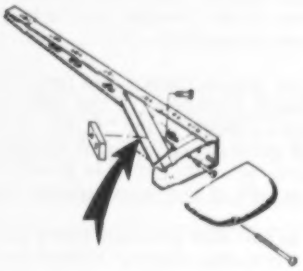
Fuel was slow draining from the sump on a Cessna 172. A rush of air was heard when the fuel cap was removed. The normal vent system was found plugged. If a rush of air is heard when the fuel cap is removed, it is recommended the normal vent system be checked for obstruction. Airworthiness Directive 79-10-14 had been complied with on this aircraft.

Cessna
Model 340A

Elevator Structure

There have been numerous reports of cracks being found in the elevator skins. Cessna Multi-Engine Service Letter No. ME76-15 pertains to this problem.

In addition, reports have been received concerning cracking of the diagonal rib on the outboard end of the elevator. This rib helps support the elevator balance weight. A redesigned diagonal rib is now available which will accommodate additional rivets for extra strength. Details are provided by Cessna Multi-Engine Service Letters Nos. ME77-31 and ME79-44.



Cessna
Model 401A

Inlet Air Duct,
P/N S-1053E36W1440

One operator reported two new ducts delaminated (inner liner came loose) when the ducts were bent for installation. Inspection of the duct for this condition is recommended.

Cessna
Model 421C

Wings

Heavy corrosion was found between the stainless steel doubler and the aluminum leading edge skin on a set of wings purchased for replacement to a damaged aircraft.

Any used component intended for use on an aircraft should be thoroughly inspected for every possible condition and not just appearance. The wings must have had a thorough inspection, as the corrosion was found.

Storage of used components, such as wings, tail surfaces, etc., should be such as to prevent entry of moisture. If wings are stored leading edge down, the wing can catch rain, melted snow, etc., through the aileron and flap attach holes, but there are no drains for the water to escape. Corrosion can also occur if components are stored on the ground or on blocks which can settle until ground contact.

ENSTROM

Enstrom All Models	Cooling Fan, P/N 28-12601-1	A vibration was apparent during cruise flight and the aircraft was returned to the airport. An investigation revealed two fan blades had separated from the cooling fan assembly and several of the other blades were loose. Strict adherence to the 100-hour inspection requirements is recommended.

GATES LEARJET

Gates Learjet All Models	Rudder Pedal Heel Plate Clearance

There have been isolated reports of the pilot's shoe heel becoming lodged between the rudder pedal and the heel scuff plate when the rudder pedal is returned from the full forward position. Although the majority of these reports resulted from on-the-ground experiments, the potential exists for a take-off or landing occurrence. This condition is most likely to occur when the heel of the footwear used is large, i.e., similar to that used on the currently fashionable high heel shoes or possibly western style boots.

A temporary Flight Manual Change was issued January 18, 1980, which contained a "Note" to be sure that the footwear used does not hinder movement of the rudder pedals. This flight manual change is applicable to all Learjet models. Gates Learjet Service News Letter No. 45, dated January 1980, also contains an article pertinent to the rudder pedals which expands the coverage of the flight manual Note. In addition, an Airplane Modification Kit (AMK) is being prepared by the manufacturer which will provide greater clearance between the rudder pedals and the heel plate. This AMK will be released for retrofit of airplanes already in service.

It is recommended that each preflight check include verification that rudder pedal movement is not hindered by the type footwear used. A periodic check to assure the heel scuff plates are firmly fastened and pulled down into the carpet is also suggested.

Gates Learjet Models 23, 24, 25, 28 and 29; 35 and 35A; and 36 and 36A	Ground Operation of Windshield Heat System

The following information is contained in Gates Learjet Service News Letter No. 44, dated November/December 1979:

> "It has been determined that operation of the windshield heat system during ground operation, under ambient conditions where windshield heat is not required, may result in surface crazing of the windshield.
>
> "For operation of the windshield heat system while taxiing, the flight manual procedures should be closely followed. Windshield heat should only be used as required for the ambient conditions and at or below the specified engine RPM.
>
> "For any windshield heat system operational and maintenance checks performed under static ground conditions, it is recommended that a protective cover be taped to the windshield in the nozzle outlet area. The windshield cover should be at least the nozzle width and 6 inches aft of the nozzle outlet."

Gates Learjet Model 24D	Battery Vent	There have been two recent reports of finding the battery vent lines plugged or partially plugged on aircraft modified by STC SA871-SO (lead acid batteries). One aircraft had 425 hours and the other 530 since hose replacement. Cause or content of material was unknown at the time of the report. It is recommended vent hoses be checked frequently.

GULFSTREAM AMERICAN

Gulfstream American Model AA-1A	Bracket, P/N 701063-2	Severe intergranular/exfoliation corrosion was found on the left main landing gear bracket during an annual inspection. The aircraft was manufactured in 1971 and had accumulated 1,818 hours.

HUGHES

Hughes Model 269C	Bearing Set, P/N 269A1231	There have been four recent reports of finding the main rotor pitch bearing set rough and galled. The aircraft times were from 106 to 448 hours.

MITSUBISHI

Mitsubishi Model MU-2B-20	Cable Assembly	The emergency main gear release cable in the left wheel well was found broken. An investigation revealed the plastic coating on the cable had bunched up, causing the cable to flex sideways instead of moving back and forth inside the housing.

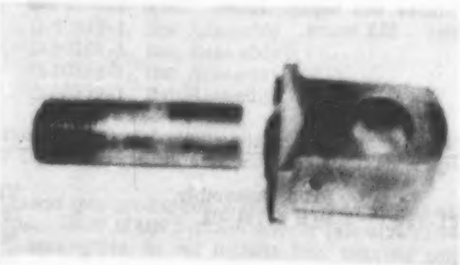
PIPER

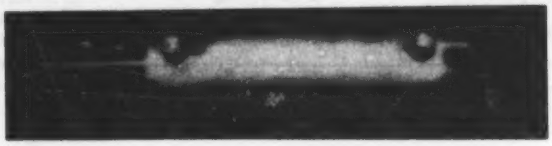
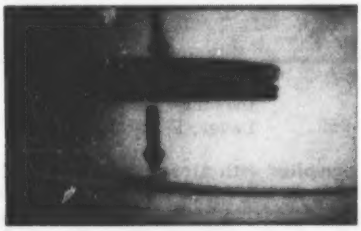
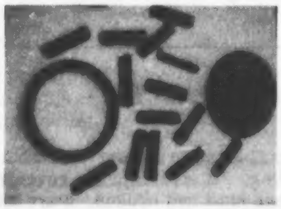
Piper Model PA-23-250	Landing Gear Selector Lever, P/N 752303

The operator complied with Airworthiness Directive 79-11-06 by replacing the landing gear selector levers on two aircraft. When comparing the two levers, it was noted that one lever was bent one-fourth inch. Installed in the aircraft, a bend may not be apparent without using a straight edge. Inspection of the levers for a bent condition, as well as for cracks, is recommended.

Piper Model PA-24-250	Brace Stud

The left main gear collapsed on roll out after what appeared to be a normal landing. An investigation revealed the left main gear side brace stud had broken. Part total time - 252 hours.



Piper Model PA-28-180	Rubber Grommets	The fuel line grommets at the wing-to-fuselage position were found split. This allowed the aluminum fuel lines to vibrate and chafe against the hole metal. Total aircraft time - 358 hours.
Piper Model PA-28R-201T	Retract Cylinder, P/N 35797-02	
The bearing broke out of the nose gear retract cylinder. Submitter advised that this is the second broken nose gear retract cylinder on this model aircraft. Part total time - 500 hours.		
Piper Model PA-30	Engine Mount, P/N 23561-031	The engine mounts adjacent to the turbocharger were found rusted through. The mounts are protected by an asbestos covering and cannot be properly inspected unless the covers are removed. Total aircraft time - 2,149 hours.
Piper Model PA-31	Strut Housing, P/N 40327-00	During an annual inspection, severe corrosion was found on both main landing gear strut housings. The corrosion was at the stainless steel clamp that secures the brake line and squat switch wire to the housing.
Piper Model PA-31T	Fork, P/N 41789-00	There have been two recent reports of finding both main landing gear lock rod attachment forks bent and worn. One aircraft had 190 hours and the other 193 hours operating time.
Piper Model PA-31-350	Frayed Cable	
A 1-inch long flathead screw somehow lodged itself in the pulley, causing severe fraying of the cable. The frayed cable was found during a detailed cabin inspection, and would probably not have been found had the aileron controls not been fully deflected.		
Piper Model PA-31-350	Heater Fan	
The pilot noticed a slight vibration prior to the heater becoming inoperative. An investigation revealed the heater fan blades had broken loose. Total time on the Janitrol heater - 525 hours.		
Piper Model PA-31-350	Probe Assembly, P/N 54751-02	There have been several recent reports of finding fuel leaking from the low level fuel sensor probe assemblies. Fuel was leaking where the wiring exits the probe, not around the plate. Average aircraft time - 1,200 hours.

SIKORSKY

Sikorsky Model S-76A	Tail Pylon Cracking	Cracking has been observed at station 300BLKD and station 316.50 frame. Also, 76209-04001-107/-108 "C-clamps" on the 76100-06000-038 stabilizer assembly were found disbonded.

SWEARINGEN

Swearingen
Model SA226-TC

Inspection Panel,
P/N 27-35083

The ground wire for the starter generator is normally attached to the relay panel in the right wheel well. The bolt loosened and burned out, so the ground wire was attached to a nearby inspection panel as a temporary fix. Results of the temporary fix are obvious in the picture.

AIRFRAME COMPONENTS

McCAULEY

McCauley Wheels (Hubs)

A number of cracks in 3-piece magnesium wheel hubs have been reported. Any magnesium hubs found cracked should be replaced with a newly developed aluminum wheel hub.

Aircraft affected are Cessna 150, 172, 177, 177RG, R172, 180, 185, 182, 206, 207, 210, and 337 models. Cessna Service Letter SE77-28 relates to the problem.

OLD PART NUMBER (Magnesium)	NEW PART NUMBER (Aluminum)
D 30065	D-30065-1, Hub L Subassembly
D 30256	D-30256-1, Hub L Subassembly
D 30097	D-30097-1, Hub Assembly
D 30201	D-30201-1, Hub Assembly
D 30254	D-30254-1, Hub Assembly
D 30259	D-30259-1, Hub Assembly

There are three identifiers differentiating aluminum/magnesium hubs; the -1 number in ink, the number "200" stamped on the first web of the aluminum, and aluminum hubs are three-fourths of a pound heavier than magnesium hubs.

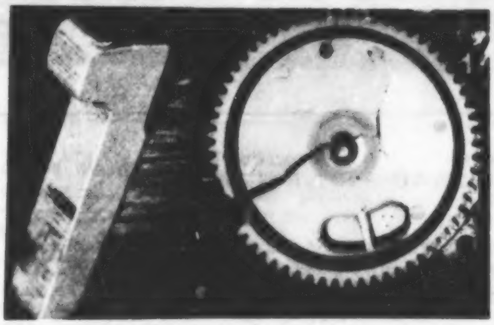
NOTE: Aluminum 2-piece nose and main wheels are being phased into production aircraft. New nosewheels are interchangeable with earlier configurations of McCauley nosewheels. NEW MAIN 2-piece wheels (aluminum) require a different brake assembly, and are NOT interchangeable. Subassemblies do not include hub, bearing assemblies and grease retainers as do assemblies.

ACCESSORIES

BENDIX

Bendix **Magneto** **Model S6LN-1227**	**Wedge,** **P/N 10-349219**	

The left magneto on the left engine on a Britten Norman became inoperative during an engine start. An investigation revealed one coil retainer wedge loosened and fell off, resulting in breaking of the large gear.



Bendix **Magneto** **Model S-1200 Series**	**Incorrect Internal Timing**	**There is a possibility that Bendix S-1200 series remanufactured (blue name plate) magnetos, Serial Nos. 801001 through 942001 were improperly internally timed. Bendix Service Bulletin No. 609, dated January 1980, pertains to the subject and provides necessary inspection procedures.**

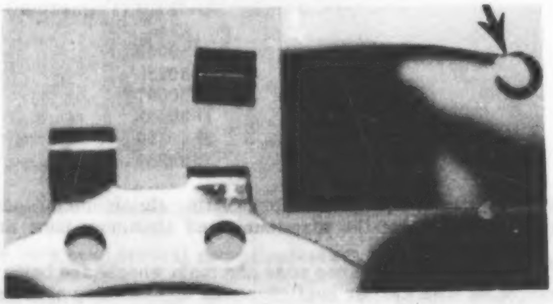
GERDES

Gerdes **Model A-510-10**	**Ignition Switch,** **P/N 69997-07**	**There was no ignition when trying to start a PA-28RT-201. The switch was checked with a meter and all terminals were found grounded. Part total time - 466 hours.**

MARVEL SCHEBLER

Marvel Schebler **Carburetor** **Model MA4-5**	**Float Hinge Point**

One float hinge ear broke off and the other was almost worn through. There was no record of the carburetor being overhauled or repaired in 2,247 hours of operation. The engine had been majored at 1,100 hours, but apparently the carburetor was not overhauled or thoroughly inspected at that time.



INSTRUMENTS

AERO MECHANISM

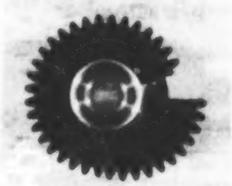
Aero Mechanism	Encoding Altimeter, P/N 8142B	There have been reports of the counter drum not being properly synchronized with the pointer. One report stated the pointer indicated 760 with the drum showing 30,000 feet. One repair station reported finding four of the altimeters with similar discrepancies.

COMMUNICATION/NAVIGATION EQUIPMENT

KING

King Pictorial Navigation Indicator Model KI525A	Drive Gear, P/N 029-0260-00

There was no indication of a heading change. An investigation revealed a broken gear. Another report stated the heading card slipped at times, caused by a broken gear. The broken gears were replaced with P/N 029-0412-01 gears, which apparently are an improved product.



ENGINES

AIRESEARCH

Airesearch Model TPE 331-3UW	Engine Anti-Ice Valve	The engine anti-ice solenoid valve would not completely open. An investigation disclosed the problem was caused by dirt in the unit. The operator suggests a daily operation of the valve be performed. The engine was on a Swearingen SA226-TC with 41 hours total time.

The General Aviation Airworthiness Alerts are prepared from information submitted into the FAA Aviation Safety Information Program. You, who are actively engaged in operating or maintaining aircraft for return to service, are the major source of this information. Your comments and suggestions for improvement of the ALERTS are solicited. Address correspondence to the Flight Standards National Field Office, Attention: Safety Data Branch, AFO-580, Post Office Box 25082, Oklahoma City, Oklahoma 73125.

ALLISON

Allison Detroit Diesel Models 250-C20 and 250-B17 Series	Oil System	Some operators have experienced problems with carbon deposits. The symptoms may include high oil consumption, heavy smoking, carbon deposits or blockage of the power turbine support scavenge oil strut and/or external sump, or high oil temperature. Allison 250-C20, C20B, C20F CSL-1089 and 250-B17, B17B, B17C CSL-1057 provides instructions to be used in case these symptoms are encountered, and preventative instructions.

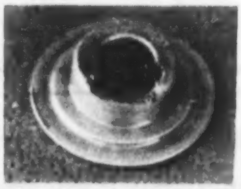
CONTINENTAL

Continental Model IO-520	Engine-Driven Fuel Pump, P/N 638154	There have been many recent reports of fuel leaking from the pumps. Four reports stated the parting surface screws were loose, which allowed leakage when the auxiliary pump was turned on. Other pumps were leaking at the relief valve cover assembly when under pressure. The problem was on pumps with 30 to 200 hours time in service.
Continental Model TSIO-520	Pipe Assembly, P/N 9910299-2	While pressure testing the exhaust system in accordance with Airworthiness Directive 75-23-08, air was observed coming through the turbocharger overboard pipe. The pipe was removed and thoroughly cleaned. Numerous burned holes were found in the pipe.

LYCOMING

Lycoming
Model O-320-H2AD

Exhaust Valve Spring Seat



The bottom of the key seat broke out, allowing the key half to fall out of place, which caused wear of the valve stem. The engine had accumulated 155 hours since compliance with Lycoming Service Bulletin No. 435.

Lycoming
Model IO-360-A1B6D

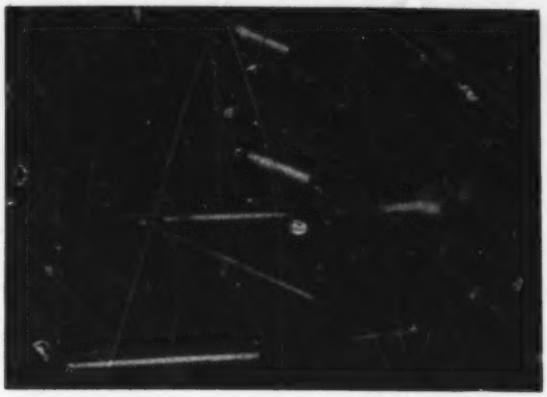
Oil Pump

There have been two recent reports of loss of engine oil pressure during flight. Each incident was caused by failure of the oil pump drive impeller gear. One failure resulted in a broken tooth lodging between the gear and housing, causing damage to the oil pump housing. One engine had accumulated 1,041 hours and the other had 1,412 hours. One engine was a total loss. The connecting rods froze on the crankshaft, the rod bolts broke, and the rods went through the crankcase.

Lycoming
Model TSIO-540-J2BD

Support Assembly,
P/N LW-12452

During a 100-hour inspection, the turbocharger support assembly was found broken and separated at the lower left leg, just forward of the welded gusset. Engine operation had been reported as normal. Part total time - 898 hours.



MAINTENANCE NOTES

BATTERY VENTILATION SYSTEMS

The National Transportation Safety Board recently determined probable cause of a fatal accident to have been one or more explosions in the aircraft aft fuselage, resulting in fire and subsequent loss of control capability. The explosions were attributed to hydrogen gas in the tail cone igniting as it was drawn past operating electrical equipment.

During investigation, it was noted that vent hoses to one side of each battery case were not connected. Thus, it was possible for hydrogen gas to pass from the battery to the tail cone area.

In the battery charging process, the charging voltage, at constant current and normal charging rate, increases gradually to slightly above full charge voltage, then increases rapidly from this point unless controlled. This latter portion of the charging cycle is known as the gassing period and is characterized by, among other things, the rapid loss of electrolyte through evaporation and disassociation into free hydrogen and oxygen. Undesirable gassing is normally controlled by voltage regulating devices; however, if these devices malfunction, it is essential that ventilation systems function properly.

Maintenance personnel and FAA inspectors should be alert for signs of overcharging and give immediate attention to voltage regulator controls when overcharging is indicated. When batteries are installed or inspected, particular attention should be given to vent systems to be certain that they are in good condition, free of bends and kinks, and properly connected.

PLASTIC BUTANE LIGHTERS

"The following information was received with a request for wide dissemination:

> 'One private company experienced two deaths in a 30-day period, resulting from plastic butane lighters in welding shops. One resulted when a slag spark from a burning operation flew into a man's pocket, burned through the lighter and exploded, causing instant death. The other occurred when a welding spark burned through a man's pants pocket, causing the lighter to explode. The man's leg was amputated. He died 3 days later.'

"Needless to say, no one should carry disposable butane lighters on their body during or near welding operations."

NOTE: The above article was published in Alerts No. 19, February 1980, after it was received from what was considered a reliable source. However, so far, there has been no evidence to substantiate the fatalities. There are several substantiated incidents of injuries, primarily burns, from ruptured and burned-through lighters.

THE BEST WAY IS THE SAFE WAY - THE SAFE WAY IS THE BEST WAY.

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ADVISORY CIRCULAR
AC 43-16

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, D.C. 20590

GENERAL AVIATION AIRWORTHINESS ALERTS

JUNE 1980

FLIGHT STANDARDS NATIONAL FIELD OFFICE
MIKE MONRONEY AERONAUTICAL CENTER

The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported to be significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: Flight Standards National Field Office, Attn: AFO-580, P. O. Box 25082, Oklahoma City, Oklahoma 73125.

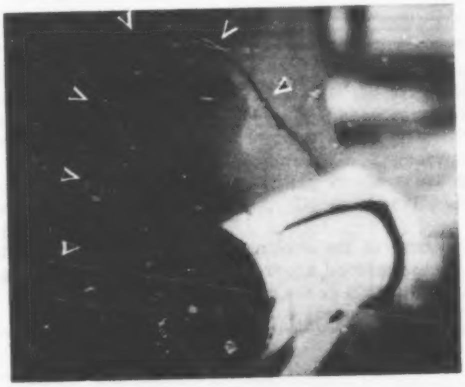
AIRCRAFT

BEECH

Beech
Model B19

Gear Strut Housing

A crack was found in the left main landing gear strut housing. The crack starts at a screw hole, goes up the housing and back down adjacent to the fork area. Beech Class II Service Instructions 1084, dated October 1979, pertains to installation of a clamp. The aircraft was used for training and had a total of 1,908 hours.



Beech Model E90	Elevator Rod End	The pilot experienced slight vibration from the elevators during flight. A severely worn bearing was found on the rod end of the left elevator push rod on the forward end of the tube. This bearing had 366 hours since new, and the operator suggested a possible cause for the bearing condition may have been wear in the trim tab assembly. All components in the primary control system should be carefully inspected on a periodic basis for evidence of wear, looseness or binding.
Beech Model A100	Bleed Air Hose, P/N 106200H10-12	The bleed air hose in the right center section became brittle and broke. The broken hose caused damage to the flap flex drive cover. This aircraft was manufactured in 1973, and had accumulated 1,900 hours time in service.
Beech Model 200	Exhaust Stack, P/N 101-950016-23	The deice tube broke on the left exhaust stack on the right engine. Hot air from the broken tube burned the torque manifold oil line, causing loss of the autofeather function of the overspeed governor.

BELL

Bell Model 206L	Tail Rotor Blade, P/N 206-010-750-7	The tail rotor blade was found cracked during a daily inspection. The crack was on the outboard side, 6½ inches from the butt end, even with the outboard end of the inside doubler. The crack was 2½ inches long from the leading edge toward the trailing edge.

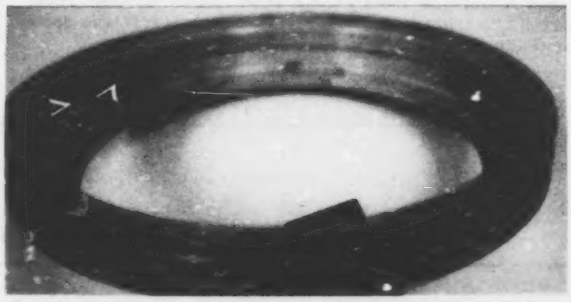
BOEING

Boeing Vertol Model 107	Lag Damper Piston Rod, P/N 5521642	During helicopter external load operations, the subject rotor hub lag damper piston rod failed. The part had been in service for 666 hours.

BRANTLY

Brantly Model B-2B	Flywheel Pulley

Upon removal of the cooling fan drive belts, the center pulley land was found severely corroded and there was a crack on the inside of the pulley flywheel. Total time on the part - 1,219 hours.



CESSNA

Cessna Models 152 and A152	Starter Bearing Plate Screws	Cessna has issued Service Information Letter No. SE80-10, which includes a reprint of Avco Lycoming Service Instruction No. 1389 pertaining to the Prestolite starters used on the models 152 and A152 airplanes. The use of Locktite Grade A is recommended to prevent the starter intermediate bearing plate retaining screws from loosening due to vibration.
Cessna Model 182Q	Fuel Line Assembly, P/N 0700099-34	The fuel line from the selector valve to the fuel strainer was severely chafed. The chafed area was under the right front seat rudder pedal controls. A cable attach tab on the left rudder pedal was chafing the fuel line. It is recommended the area be inspected for this condition.
Cessna Model T210M	Brake Line	The left and right main gear brake lines were worn by the brake disc. Total time - 354 hours.
Cessna Model 210N	Control Wheel Cable Assembly, P/N 1570307-3	During flight the communication transmitter was keying and blocking out the tower frequency. An investigation revealed the cable assembly circuit board, P/N 1570306-1, had detached at one end. After becoming detached, the unit had rotated and was shorting against the control column. This short circuit was keying the transmitter. One mounting screw was missing and another screw was loose. Recommend the area be inspected during the acceptance check or during the first 100-hour inspection. Total aircraft time - 34 hours.
Cessna Model 310R	Nose Landing Gear Mounting Structure	Numerous reports of cracks found in the nose wheel well have been received. The cracks were located in the areas where the brackets for the nose gear trunnion and nose gear drag brace are mounted. This was not considered to be a significant problem on the 310Q and earlier models; however, it appears the Model 310R is more susceptible to cracking in the areas due to the extended nose on these airplanes. Cessna Service Letter No. 77-12 pertains to this subject. Aircraft affected: S/Ns 310R0001 through 310R0816.

SAFETY IS NEVER SIGNING OFF ANYTHING YOU HAVEN'T REALLY LOOKED AT - AND WOULDN'T FLY IN YOURSELF

Cessna Model 400 Series (except 441)	Trim Tab Actuators

A vibration in the tail of a Model 402 during flight was determined to have been caused by a badly worn elevator trim tab actuator. The threads on the screwjack were deteriorated to the point that the screw was free to move in and out of the actuator body with very little contact or resistance. Total time on the aircraft - 2, 041 hours. There was no evidence in the aircraft records to indicate the actuator had ever been serviced in accordance with the manufacturer's recommendations.

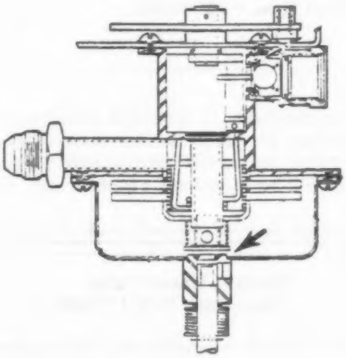
All current service manuals for the Cessna 300 and 400 series airplanes contain the same basic information. A check for trim system "free-play" is recommended every 100 hours, as is a visual inspection of all actuators for travel, condition, and security.

Cessna issued Service Information Letter No. ME77-34 on December 23, 1977, and Supplement 1 to the same letter on February 13, 1978. This service letter calls for, among other things, the checking of the airplane trim tab systems each 100 hours time-in-service for freedom of movement, in addition to the "free-play" check.

Cessna Service Information Letter No. ME79-28, dated August 1, 1979, was issued to notify Cessna owners/operators that the recommended trim tab actuator inspection/lubrication interval had been reduced from 1, 500 hours to 1, 000 hours.

This information is being added to all affected airplane service/maintenance manuals at the next scheduled revision of each manual.

Cessna Model 401/402	Fuel Selector Valve Sediment Bowl



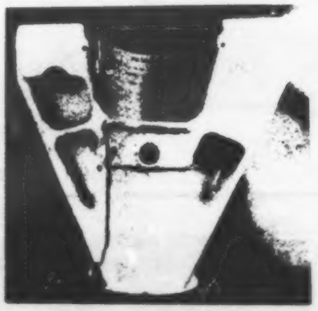
An investigation into the cause of engine stoppage in flight disclosed the design and positioning of the fuel bowl does not allow complete drainage of sediments and/or water from the fuel system. A ledge, approximately 1/16-inch high, exists inside the fuel bowl at the quick drain valve. The quick drain valve is brazed into the fuel bowl, and a portion of the valve extends up into the bowl.

It is suggested maintenance personnel remove, clean and inspect the sediment bowls at least annually. Upon reinstallation, a check for fuel leaks at the bowl gasket is very important. Wing fires and explosions have occurred in the past as a result of fuel leakage in this area.

Cessna Model 402C	Hydraulic Sight Tube, P/N 5117007-12

During a landing approach the pilot observed vapor and fumes in the cabin. The electrical equipment was shut down and the vapor cleared. An investigation revealed hydraulic fluid in the nose area from a broken sight tube on the hydraulic reservoir. Apparently, this was caused by rough handling of baggage.

Cessna Model 421C	Trunnion, P/N 5041102



The right main gear trunnion was found cracked. The circumstances under which it occurred and the cause are unknown. Total aircraft time - 996 hours.

ENSTROM

Enstrom
Model 280C

Clamp,
P/N 28-16163

The collective went slack as the pilot was landing the aircraft. An investigation revealed the pilot's collective clamp broken. Total time on the part - 925 hours.

GATES LEARJET

Gates Learjet
All Models

Instrument Panel Maintenance

The following information is contained in Gates Learjet Service News Letter No. 40, dated June 1979:

> "Care must be used when lowering and raising instrument panels for maintenance work required behind the pilot's and copilot's instrument panels. Mechanics are cautioned to check for wiring or instrument plumbing which may be pinched when the panels are reinstalled."

LAKE

Lake
Model LA-4-200
S/Ns 927, 931, 933
through 941, 944
through 947, 949
through 953, 955
through 957

Engine Mount Brackets,
P/Ns 2-5400-235 and
2-5400-236

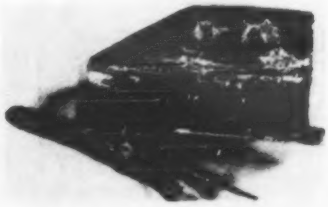
A report of contact between the engine mount brackets and the steel washer on the forward portion of the Lord rubber mount assemblies has been received. The condition was noted after accomplishment of the addendum to Lake Aircraft Service Bulletin B61.

MOONEY

Mooney
Model M20C

Bracket,
P/N 240014-26

The attaching bracket for the right flap push rod failed because of severe corrosion. The aircraft was manufactured in 1965, and had accumulated 2,142 hours.



PIPER

Piper
Model PA-28

Brake Cylinder,
Cleveland P/N 61-21

"During an annual inspection, both main gear brake cylinder castings were found cracked in the caliper guide pin casting area."

The above article was published in Alerts No. 17, December 1979. Recently, a mechanic advised that if the brake cylinder is removed and the caliper guide pins cleaned and greased each 20-25 hours, this condition will not occur. This applies to the McCauley brakes, as well as the Cleveland, which are similar.

Piper
Model PA-28-161

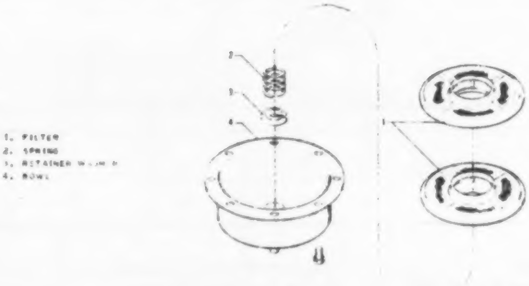
Nose Gear Shimmy

A severe shimmy was obvious during takeoff and landing, especially when braking or when forward pressure was applied to the control wheel. An investigation revealed worn bushings, at the upper and lower strut attach points, and worn scissor bushings. Four bushings and the upper and lower link assemblies were replaced. This problem was determined after deflating the nose gear strut. Total aircraft time - 1, 075 hours.

Piper
Models PA-28-235,
PA-32-260, and
PA-32-300

Fuel Selector Valve and
Filter Assembly

Improper reinstallation of the filter disks in the strainer bowl may cause the valve to malfunction. Special care must be taken to install this filter with correct orientation.



Piper
Model PA-31

Gear Door Hinge Bracket,
P/N 40560-05

The right main landing gear would not fully extend prior to landing. The aircraft was landed gear up with minor damage to the propellers, wing flaps, belly skin, and right main gear door. An investigation disclosed the forward right main gear door hinge bracket was broken. The investigation revealed that when the gear door opened for gear extension, the broken hinge bracket wedged against the aircraft inboard of the landing gear cutout. The right main gear tire lodged on the partially opened door, preventing full gear extension.

Piper
Model PA-31

Hydraulic Pump,
P/N 26802-08

It took several attempts to get the landing gear down and locked. An after-landing investigation revealed fluid had been lost through two cracks in the center section of the hydraulic pump housing. Total time on the pump - 1, 176 hours.

A MINUTE FOR SAFETY IS BETTER THAN A MONTH FOR REPAIRS.

Piper
Model PA-31
(Australian Registry)

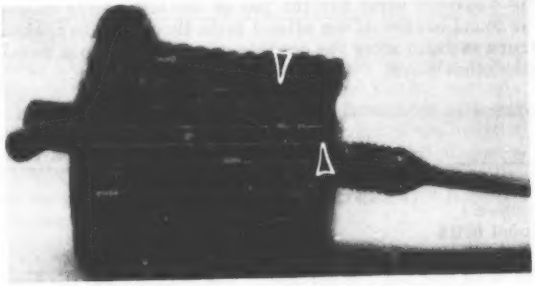
Landing Gear

The landing gear did not fully retract in flight because of low hydraulic quantity. The aircraft was just out of maintenance, which included retraction tests. Residual oil film on the inside of the sight tube was mistaken for a full reservoir.

Piper
Model PA-31-350

Gauge Assembly,
P/N 44490-00

The aircraft appeared to have frozen brakes after being outside during cold weather. The brakes were worked loose and the aircraft was flown to a maintenance facility. An investigation revealed damage to the left brake assembly and ice in the brake lines. Further investigation disclosed the gauge assembly (brake reservoir cap) was hard and had split open. It is recommended this unit be checked for condition during inspections. Total aircraft time - 1,791 hours.



Piper
Model PA-31-350

Exhaust Pipe,
P/N LW-12468

The pipe cracked at the clamp flange on the right side of the right engine. The cracked pipe was on a Lycoming LTIO-540-J2BD with 151 hours.

Piper
Model PA-32-300

Rear Spar,
P/N 62054-00

Severe dissimilar (galvanic) metal corrosion was found at the inboard end of the left aft wing spar where the steel plate, P/N 66762-00, is attached to the aluminum spar. The aircraft was manufactured in 1968 and had accumulated 2,313 hours.

Piper
Model PA-38-112

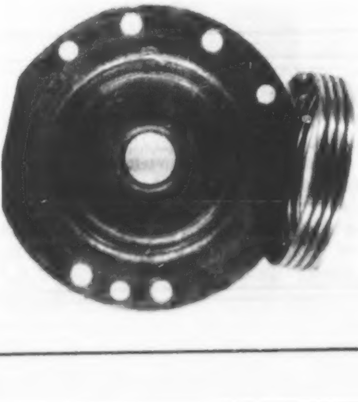
Engine Mount Tube Failure,
P/N 77651-02

The lower left diagonal tubular member failed where it joins the engine mount tubing cluster at the firewall end. The condition was found during a 100-hour inspection performed 395 hours since installation of the split reinforcement tube, P/N 77526-04, in accordance with Airworthiness Directive 79-01-07.

Piper
Model PA-38-112

Elevator Trim Control

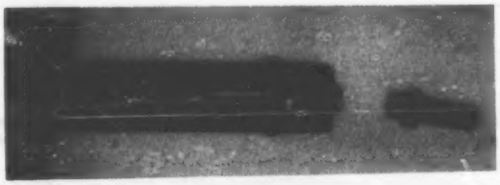
The pilot experienced a severe nose up condition during takeoff and could not trim for level flight. The system was tested in accordance with the latest instructions, and checked normal. During further inspection and checking, the trim control was disassembled and the spring and housing were found badly worn. Part total time - 495 hours.



ROCKWELL INTERNATIONAL

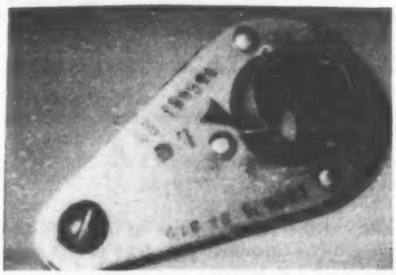
Rockwell Model 680T	Strut Assembly, P/N 3620045-1	

The outboard strut for the top of the left engine mount was found broken at the aft end in the threads. The broken strut was found after the cowling was removed to accomplish other work.



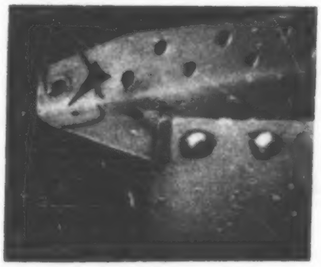
Rockwell Model 690A	Arm Assembly	

The drag link support structure was buckled and the arm assembly was cracked. Probable cause - overstress during towing. Aircraft time - 1,346 hours.



Rockwell Model 690A	Channel, P/N 310054-41 and -42	

Both channels of the nose gear drag strut bearing housing were found cracked during an inspection. Aircraft time - 4,108 hours.



SIKORSKY

Sikorsky Model S-61	Sponson Truss Tube	There have been two reports of suspected cracking on the sponson truss tube assemblies (S6125-51212 and S6125-51214 series) during compliance with SB 61B25-10B. Evidence of water and/or corrosion was reportedly also found inside the tubes.

UNIVAIR

Univair Model 108 (Stinson)	Pilot's Seat	The pilot's seat frame (seat track attach point) failed, allowing the pilot to fall backward onto the rear floor. Owners and operators should inspect the lower seat structure, especially the seat track attach points, for cracks.

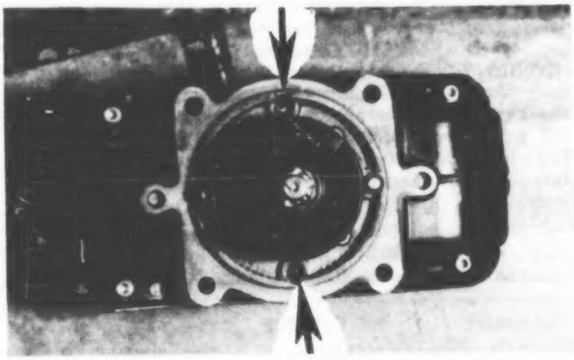
ACCESSORIES

BENDIX

Bendix Magnetos Models S-20 and S-200 Series	Housing Screw and Lock Washer, P/N 10-157158	Reports advise that the five screws that join the distributor housing to the magneto housing loosen and fall out during engine operation. The condition can result in movement or separation of the distributor housing, internal damage to the magneto and loss of output. Two recent reports concerned magnetos with 212 hours and 974 hours time since overhaul. Improper torquing procedures at overhaul or reuse of screws with flattened lock washers could be cause factors.

Bendix Magneto Model D4RN-2021	Housing, P/N 10-382820-2

There have been reports of the dowel holes drilled through the housing, allowing engine oil to fill the magneto. One report stated two extra dowel pin holes had been drilled in the drive end of the magneto housing. Engine oil entered the magneto, causing a malfunction. It was reported that this magneto had been to Bendix for Airworthiness Directive 79-18-06 compliance prior to the malfunction.



CHAMPION

Champion	Oil Filter, P/N CH48104	Champion Spark Plug Company has issued a bulletin recalling Champion CH48104 oil filters with a manufacturing date of 2K4( ) or earlier. It is strongly recommended that these filters be removed from service and stock and returned to Champion.

RAJAY

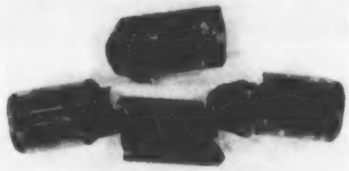
Rajay Models Sky-Ox, Sk-9, and Sk-10 Portable Oxygen	Oxygen Regulators 2600B, P/N 500014-00; and 2700B, P/N 500009-00 (non-certificated)	Due to a supplier's manufacturing defect in these regulators, shipped between October 1979 and January 1980, an increased rate of oxygen flow (with a resulting decrease in oxygen duration) could result. A list of affected serial numbers was sent out with a letter, by Rajay, to potential users. A Sky-Ox regulator user who suspects they may have one of these regulators should contact Rajay at (213) 426-0346, or write to Rajay Industries, Inc., P. O. Box 207, Long Beach, Ca. 90801.

ENGINES

CONTINENTAL

Continental **Model O-200-A**	**Piston Pin,** **P/N 530830**

An unusual noise was heard during engine runup on the ground. An investigation disclosed No. 3 cylinder piston pin was broken. The broken pin stayed in place until the cylinder was removed, and there was no other damage. Total engine time - 600 hours.

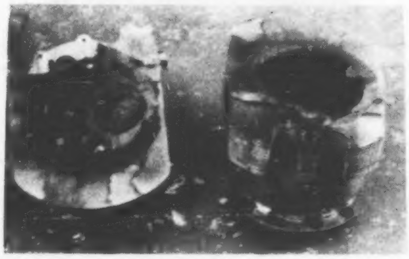


Continental **Model IO-470-V**	**Counterweight,** **P/N 352117**

The crankshaft counterweight plate had worn a slot and was sticking out of the counterweight one-fourth inch. The retaining pin holes were found .008 out of round. This condition was found during a routine overhaul teardown.

Continental **Model IO-520**	**Cylinder**

The cylinder head separated during climb, after takeoff. Compression check was normal 75 hours previously. Total time since cylinder overhaul - 110 hours.



Continental **Model TSIO-520** **Series**	**Oil Dipstick,** **P/N 633233**	There have been many reports of the oil dipstick falling into the engine. The four metal lock tabs holding the dipstick to the cap corrode away, letting the dipstick and the remaining portion of the tabs fall into the oil sump. The spring tension on the oil cap is also lost, with the possibility of the cap vibrating off. The most recent reports have been on engines with 450 to 960 hours.
Continental **Model GTSIO-520**	**Starter Adapter Assembly**	During an engine inspection, the torsional damper, P/N 632834, was found separated from the shaft. The torsional damper retaining nut and washer were found in the cowling. There was no evidence that the compression spring, P/N 628311, the lock nut key, P/N 632980, or the snap ring, P/N 502171, had been installed at engine overhaul. The same condition was found on four other overhauled engines - compression spring, lock nut key, and snap ring were not installed. It is recommended that applicable engines be inspected for these missing parts.

LYCOMING

Lycoming Model O-235-L2C	Push Rod, P/N 73806	Many reports of intake and exhaust valve push rod shortening due to the steel ball ends being pounded into the aluminum push rod tube, have been received. The condition has been detected when checking for the cause of engine power loss or rough running, and during inspection to determine the cause for excessive valve clearance.
Lycoming Model O-320-H2AD	Cylinder, P/N LW-15318	The cause for engine noise and power loss during takeoff was attributed to loosening and loss of No. 3 cylinder lower spark plug insert, P/N 66796. The insert, with the spark plug installed and attached to the ignition lead, had blown out of the cylinder. The engine had been in service for 945 hours.
Lycoming Model O-320-H2AD	Engine Mount Bolts, P/N LW-38-2.75	During routine maintenance, the bolts that secure the upper and lower engine mounting brackets, P/Ns LW 13290 and LW 13291, to the engine crankcase were found loose. Of 34 Cessna 172N aircraft checked, 15 were found with loose bolts. In most instances, all bolts were loose; some were only finger tight. Airworthiness Directive 79-10-03 pertains to the subject.
Lycoming Model TIGO-541-E1A	Cylinder, P/N LW-13561	A fuel stain was noted in the area of No. 5 cylinder intake port during a routine 50-hour inspection. Close examination revealed a crack between the top two cooling fins of the cylinder head above the intake port. The engine had 604 hours time in service.
Lycoming Model LTS/LTP 101 Engines	Compressor Cleaning	Washing of compressors is an acceptable practice to remove salt, dirt, and oil deposits from the air flow path. However, subject engines must be washed in accordance with procedures published in the applicable Avco Lycoming Maintenance Manual. Other procedures, such as washing the compressor while operating at or above ground idle speed, may cause serious damage to the compressor. Operators who have water-washed their engines while operating at ground idle speed are advised to contact the Manager, Customer Service, LTS/LTP101 Programs at (203) 378-8211, extension 1802 or 1809.

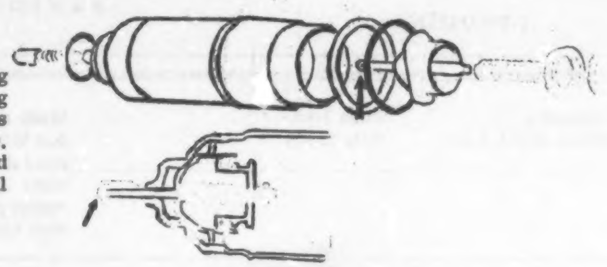
PRATT & WHITNEY OF CANADA

Pratt and Whitney Models PT6A-6, 6A, 6B, B/C20, -20, 20A, 20B, 21, 25, 25A, 27, 28, 34, 34B, 34AG, 36 and 135	Pesco or Sundstrand Fuel Pumps, P/Ns 025323-101-01, 024800-104-01, or 024800-101B-01	A recent flameout of a PT6A-20 engine was attributed to failure of a Pesco fuel pump drive spline. The clip that restricts axial movement of the pump drive coupling was displaced, allowing the coupling to move toward the engine, reducing its engagement with the pump's drive splines to approximately one-fourth inch. This resulted in eventual failure of the pump drive splines. United Aircraft of Canada Service Bulletin No. 1316, dated September 29, 1979, pertains to the subject and calls for installation of new Sundstrand drive coupling, P/N 5006050, on the subject Pesco and Sundstrand fuel pumps. The new coupling incorporates a flange to restrict axial movement, and compliance with the bulletin is classified as "URGENT."

Pratt and Whitney
Model PT6A-41

Oil Filter Check
Valve Shaft

The cause for low oil pressure was attributed to breaking away of the shaft pin hole that accommodates the spring retainer collar. The discrepancy occurred at 1,170 hours time since engine overhaul. PWC Service Bulletin No. 3066, Revision 3, had not been complied with. The old P/N 3023348 filter housing and valve assembly were still installed.



PROPELLERS

HARTZELL

HARTZELL SERVICE INFORMATION RELATING TO AIRWORTHINESS DIRECTIVE 77-12-06

AD 77-12-06 requires certain inspections and rework at intervals specified in Hartzell Service Letter 61B or later revisions. Since the effective date of the AD, Hartzell has revised the service letter through 61F. The latest revision acceptable to FAA for use in complying with the AD is 61C. Use of a later revision could result in non-compliance with the AD. In the event revision 61C has been discarded, new copies are available from Hartzell Propeller Company, 350 Washington Avenue, Piqua, Ohio 45356.

SENSENICH

Sensenich
Metal Propellers

Attachment Bolt
Wrench Torque

The propeller manufacturer advises that several instances of attachment bolt failure have been recently reported. The cause for bolt failure has been attributed to excessive wrench torque being applied during propeller installation. When installing a metal propeller, be certain the bolts, nuts, and bushings are clean and dry, free of any lubricant, and the proper wrench torque is applied. Sensenich Service Letter No. 80-1, dated January 15, 1980, pertains to the subject and advises of the availability of torque decals for propellers using 3/8- or ½-inch diameter attachment bolts.

Sensenich
Model BK063
(Experimental)

Blade Face Cracked

The subject propeller was designed for air racing, was highly polished and modified by the owner with 1 inch removed, and each blade speed tipped. After 4½ hours of operation, a crack was found on the face of one blade, at about the mid-blade location. No vibration was noted during flight. The crack was found during preflight inspection.

Sensenich
Model 74DM6-S8

Necked Bolts

During the first 100-hour inspection of the propeller bolt torque after propeller change, the bolts would not hold the required torque.

A similar article appeared on page 12 of Alerts No. 12, July 1979.

MAINTENANCE NOTES

SPRING AND SUMMER OPERATIONAL PROBLEMS

Aircraft that have been in winter storage and are being readied for summer operation should be thoroughly inspected for damage, and nests from rodents, birds and insects. Many hidden areas have been found containing nests and residue, resulting in obstructed air ducting, control system interference and deteriorated structural members. Summer operation inflicts its hazards in the form of insects carrying mud into fuel vent lines, airspeed pitot tubes, and miscellaneous drain tubes. Preventive maintenance in these areas will aid to assure safer summer operations.

MISMATCH

It was reported the improper use of an air horse tow motor caused this broken PA-31-350 nose wheel. The wheel cradle was not adjusted to match the wheel size, resulting in a cracked rim.

CORROSION DETECTION

The operator of a 1965 model Cherokee reported to her mechanic that she noted a loss of hydraulic fluid during preflight checks, but did not see any leaks on the ground below her airplane. The mechanic removed the front interior cabin side-wall and found extensive corrosion on the lower front fuselage (beneath the cabin window) and the fuselage bottom adjacent to the side. Also extensively corroded were the hydraulic line and the fuel line; the former was leaking, and the latter was almost corroded through the tube wall.

One could make several guesses as to the cause of the corrosion. Possibly, a poor seal around the bottom of the cabin window allowed water to enter under the skin. Also, the airplane had been repainted over its life; possibly, paint stripper was used and acted as the corrosive agent.

Two lessons to be learned from this experience: causes for things noted in preflight inspection may require a little digging to uncover. Secondly, when doing a major inspection, such as a 100-hour or an annual, do more than just give a "once-over" look to structures.

LATE LESSON

A recent occurrence in ground servicing of an aircraft resulted in a fire and substantial damage to the aircraft. The aircraft had been fueled preparatory to departure, during cold weather operation. Difficulty was experienced in starting the engines so it was decided to put the aircraft into a heated hangar to pre-heat the engines and charge the aircraft battery. A battery charger was connected to the aircraft battery while the battery was still in the aircraft. As the fuel inside the tank expanded from the warmer temperature inside the hangar, it escaped through the fuel venting system and was ignited either by the sparking or overheated battery charger leads. A fire ensued, which caused substantial damage to one wing of the aircraft and could have set fire to the hangar, had it not been extinguished in time.

This serious occurrence, which was nearly catastrophic, could have been prevented if the battery had been removed from the aircraft and charged in a proper area designated for charging batteries.

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FEDERAL AVIATION ADMINISTRATION
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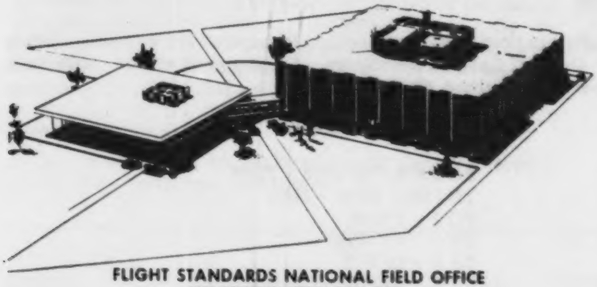
GENERAL AVIATION AIRWORTHINESS ALERTS

JULY 1980



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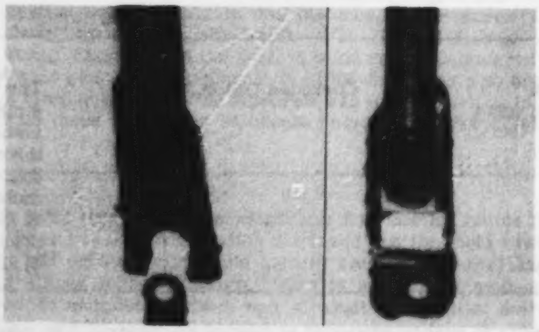
AIRCRAFT

AGUSTA

Agusta Model A109A — **Engine Mount, P/Ns 109-0605-06-13 and -14**

The engine mount flange attached to the airframe was found broken on each engine. The pilot had reported higher than normal vibration. The aft end of the engines would move 1/2 inch vertically when moderate hand force was applied. Total time - 259 hours.



BEECH

Beech **Fuel Cell Inspection**

Beech issued Class I Service Instruction No. 0632-280 to provide inspection criteria for bladder type fuel cells because numerous reports have been received of leaks being found at the drain nipples and fuel vents. Wing lower surfaces and under the nacelles should be examined each 100 hours for fuel stains or other evidence of possible fuel seepage. If stains are found, remove the access plates from the wing lower surfaces and inspect the areas between the fuel cells and the wing skin. Aircraft with fuel cells over four years old, or which are continually subjected to high temperature and/or high humidity should be checked more frequently. If fuel seepage is found or if the fuel cells appear to be hard and brittle, they should be replaced.

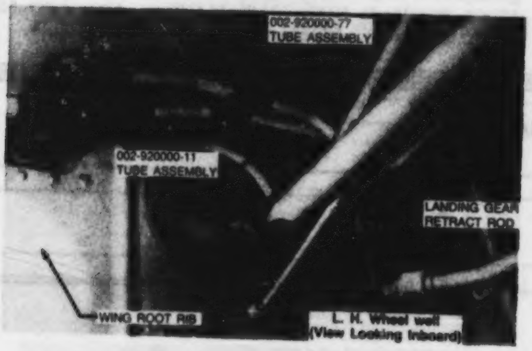
Beech **Fuel Lines in Wheel Wells**

Chafing between the landing gear retract rods and fuel lines routed through the wheel well areas has been found on some in-service airplanes.

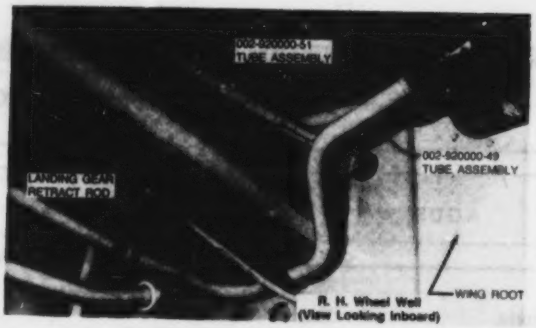
It is recommended that fuel lines in the wheel wells be visually checked at each scheduled inspection for possible chafing on the landing gear retract rod. Reposition or replace the fuel lines as necessary. During maintenance activities, avoid using fuel lines as "hand holds" to preclude distortion and resultant chafing.

Aircraft affected:

Models	Serial Numbers
95-B55 and 95-B55A	TC 1970, TC 2003 - 2260
E55 and E55A	TE 1081, 1084 - 1165
56TC and A56TC	TG 2 - TG 94
58 and 58A	TH 1 - TH 1060
58P and 58PA	TJ 3 - TJ 215
58TC and 58TCA	TK 1 - TK 105



L. H. Wheel well
(View Looking Inboard)



R. H. Wheel Well
(View Looking Inboard)

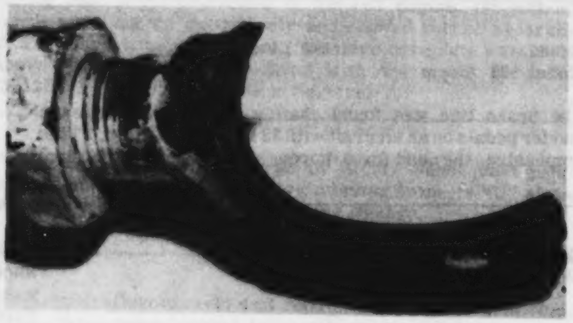
Beech
Model A23A **Corroded Doubler**

The rear seat air vent flex duct passes through the longitudinal stringer in the fuselage just aft of station 132. The doubler is installed at the cutout in the stringer. The flex duct had worn through and the duct wire was in contact with the aluminum doubler. Moisture, apparently condensate, and dissimilar metals caused severe corrosion of the doubler on the left side of the fuselage. Corrosion was beginning to develop on the doubler on the right side of the fuselage. Total aircraft time - 2, 817 hours.

In order to ensure continued receipt of the "Alerts," an address change must be reported to the FAA district office under which you exercise your certificate.

CESSNA

Cessna Model 120 and 140	Wing Strut Upper Attach Rod Ends	



A recent accident is attributable to failure of the right wing forward strut upper rod end attach fitting. The failure was caused by overload of the fitting, which was induced by corrosion and severe pitting.

Although the spherical rod end fittings are in an area which is easily inspected, it is obvious from the condition of both the failed part and the matching rod end from the opposite wing strut, that the corrosion was overlooked for an extended period of time.

It is recommended that a detailed inspection of the entire wing strut assembly, including the spherical rod ends, be made for evidence of corrosion, pitting, cracking or other indications of impending failure as soon as possible, and again at each annual inspection. Some airplanes may have an optional fairing installed which must be removed to inspect the rod ends.

Please submit an FAA Malfunction or Defect Report if any of these conditions are found.

Cessna Models 172, 172A, B, C, D, E, and F with STC SA3-663 or STC SA3-664 installed	Airborne Mounting Bracket, P/N D5-2-1 or D5002A1	Two reports of a broken mounting bracket, Airborne P/N D5-2-1 or D5002A1, have been received. The mounting bracket is used to mount a dry air pump as part of STC SA3-663 or STC SA3-664. The cracks occur through the pump mounting holes. A review of this problem has resulted in an improved bracket, Airborne P/N D5-2-2.
Cessna Model 177RG	Bracket, P/Ns 1732031-1 (L) and 1732031-2 (R)	Both aft stabilator control arm brackets were found cracked in the radius near the arm attach point. The -1 bracket was also cracked from the radius through the arm attach hole to the edge of the bracket.
Cessna Model 177RG	Landing Gear	There have been reports where, during landing, a gear unsafe indication was noticed. In one instance, the setscrew which anchors the sector gear shaft, P/N 2041012-1, was found broken. This allowed the shaft to slide until it interfered with the spur gear. The bushing, P/N S1004-58A, was also broken. In a similar instance, the setscrew was found loose. It is suggested these setscrews be checked periodically for tightness.
Cessna Model 180K	Battery Cable	The pilot experienced an electrical fire during cruise flight. An after landing investigation disclosed that the right cowl flap rod had chafed through the battery cable. The cowl flap rod had almost melted through. This is another example of the need to completely check new aircraft upon initial delivery. Total aircraft time - 60 hours.

Cessna
Models 180, 185 and 188 Series

Tailwheel Steering Mechanism

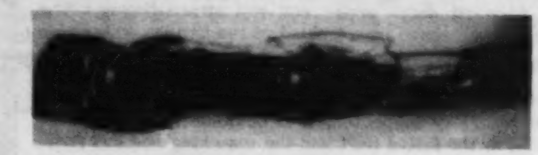
There have been numerous reports of the tailwheel steering bellcrank, P/N 0712309-16, being found with elongated holes at the cable attach points. In addition, the brackets, P/N 0712309-1, have been found cracked. These brackets are used to secure the steering bellcranks to the tailcone bulkhead.

It is recommended that the bellcranks and brackets be examined closely at each 100-hour or annual inspection.

Cessna
Model 182

Brake Line

The brake line was found chafing on the cover over the rudder pedals on an aircraft with 32 hours total time. This emphasizes the need for a thorough acceptance inspection.



Cessna
Model 182A

Aileron Cable

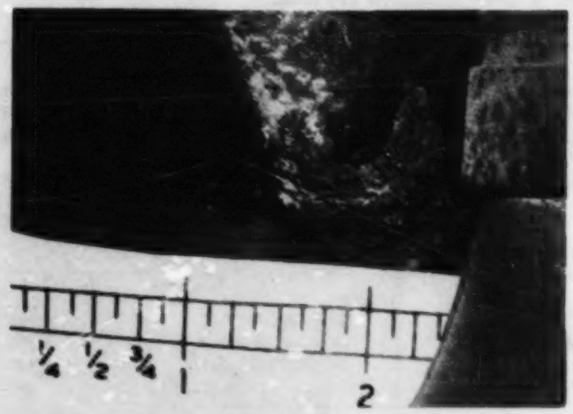
During a preflight inspection the control wheel did not move when the aileron was moved up and down. The aileron cable was found broken at the pulley at the top right rear doorpost. Further inspection revealed the flap cable very rusty and strands broken at the flap handle attach point. This aircraft was manufactured in 1958 and had accumulated 3, 000 hours. It is recommended that similar aircraft be inspected for this condition.

Cessna
Model 182P

Engine Mount

A hole, under an asbestos heat shield, was found in the engine mount during an annual inspection. Clean-up of the rusted area further enlarged the hole to approximately twice the size, as shown in the photograph. The right and left lower engine mount diagonals were found in the same condition. The asbestos wrap provided a moisture trap which accelerated the corrosion and rust.

Cessna Service Letter No. SE 76-22, dated November 15, 1976, recommended that a very high temperature enamel be applied to the engine mounts which are in close proximity to the exhaust stacks. Asbestos heat shields are not installed on the engine mount tubes by the manufacturer. This aircraft was manufactured in 1975 and had accumulated 2, 000 hours total time.



Cessna
Model 182P

Fuel Line

The doorpost fairing was removed and severe chafing was found between the aileron cable and the fuel line. The identical condition was found on another Cessna 182 and on a Cessna 210N series aircraft. Total time on the Cessna 182P - 1, 100 hours.

Cessna
Model 421B

Elevator Cable

The pilot heard a scraping sound during an after flight control check. The right elevator control cable, running through the cutout in the cockpit floorboards, was rubbing against the floorboards and had broken all but three strands of the cable. Total time on the aircraft - 3, 400 hours.

DeHAVILLAND

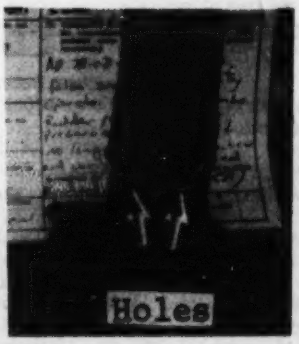
DeHavilland Model DHC-6-300	Barry Company Engine Mount Cores, P/Ns 7351257-7 and -9	During a 500-hour inspection of the right engine, the outboard engine mount cores were found loose. The cores were cure dated 79-33 and 79-34, and had been in service for 360 hours. During post flight inspection of the left engine, the outboard mount core lagged excessively and showed rubber separation at 378 hours time in service. The core cure date was 79-33. Above limit cracks were found with one mount core, P/N 7351257-9, at 61 hours time in service.
DeHavilland Model DHC-6-300	Beta Block, P/N A-3044	The right propeller feathered in flight. Subsequent ground inspection revealed the beta block missing from its "U" shaped holder that connects to the reversing linkage.
DeHavilland Model DHC-6-300	Control Column Sprocket, P/N C3CF266-3	The aircraft aileron travel was reported to be restricted during flight. Subsequent ground inspection disclosed that plastic tie cord for a wire bundle lodged between the chain and sprocket beneath the control column. The incident occurred at 8,141 aircraft hours time in service.

GULFSTREAM AMERICAN

Gulfstream American Model G-164B	Rudder Spar

The base of the rudder spar was found corroded and rusted, with holes through the tubing spar. The serial number of this aircraft is above the serial numbers covered in Airworthiness Directive 78-08-09, Aircraft total time - 1,200 hours.

NOTE: Since this article appeared in Alert No. 20, March 1980, further evaluation by the manufacturer revealed no evidence of internal corrosion or deficiency in the anti-corrosion treatment. Close examination disclosed the rudder spar tube wall had been penetrated with a tool when probing areas of external corrosion. The condition found is indicative of inadequate maintenance. Frequent inspection and thorough cleaning of all areas of agricultural aircraft is very important.



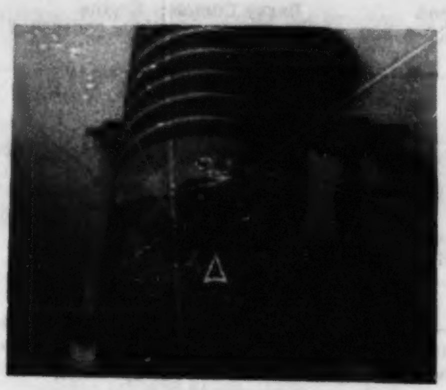
Gulfstream American Models G-164B, G-164C, and G-164D	Aileron Bellcrank and Bushing Installation	Grumman Service Bulletin No. 75A, dated January 25, 1980, calls for inspection of the aileron bellcrank arms, P/N A2855-5, for elongated cable attachment holes. If the hole elongation exceeds .031 inch, the arms may be altered by installation of bushings, P/N A1450-282, or new arm assembly, P/N A2855-13, may be installed. For aircraft with bushings, P/N A1450-281, installed per superseded Service Bulletin No. 75, the bushings may become dislodged from the bellcrank arms. Bulletin No. 75A requires inspection to determine if the bushing hole edge distance (lug depth) is less than .230 inch, which will require installation of new bellcrank arm assembly(s), P/N A2855-13.

HUGHES

Hughes
Model 269A

Bearing,
P/N MRC-301-SZZ

Both factory sealed idler pulley bearings failed at 200 hours after the bearings were replaced. The only detection of bearing failure was a high frequency noise during auto rotation. Moving the pulley by hand during preflight inspection may detect rough bearings.



Hughes
Model 369HS

Hot Clock

An electric clock was installed in the aircraft instrument panel. The clock was wired direct to the battery without a circuit breaker. The clock malfunctioned, burning the power lead as well as other wiring within the bundle. The clock is not standard Hughes equipment, and the installation was not recorded in the aircraft records. The aircraft is used in Part 135 operations.

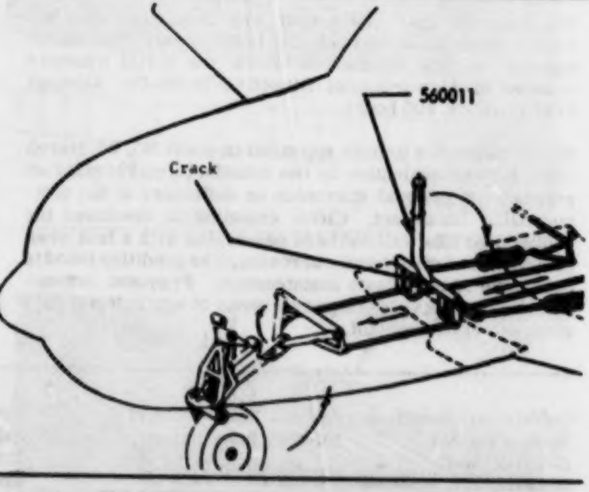
MOONEY

Mooney
Models M20, M20A, M20B, M20C and M20E

Landing Gear Retraction Handle,
P/N 5050 or 560011

An investigation of an incident involving the unwarranted retraction of the landing gear revealed that the retraction handle failed at the weld which attaches it to the pivot cross tube. There have been four similar reports of landing gear collapsing, and subsequent investigations found that cracks existed in the welds prior to breaking. It is important to note that a gear out of rig can subject the gear handle to excessive loads and stresses, and ultimate failure.

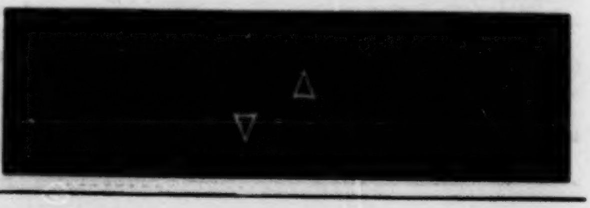
It is recommended that the welded area of the landing gear retraction handle be carefully inspected during scheduled maintenance. The landing gear rigging must be maintained in accordance with Mooney's Service Manual. Mooney Service Bulletin M-20-35A covers this same subject.



Mooney
Model M20C

Rear Spar

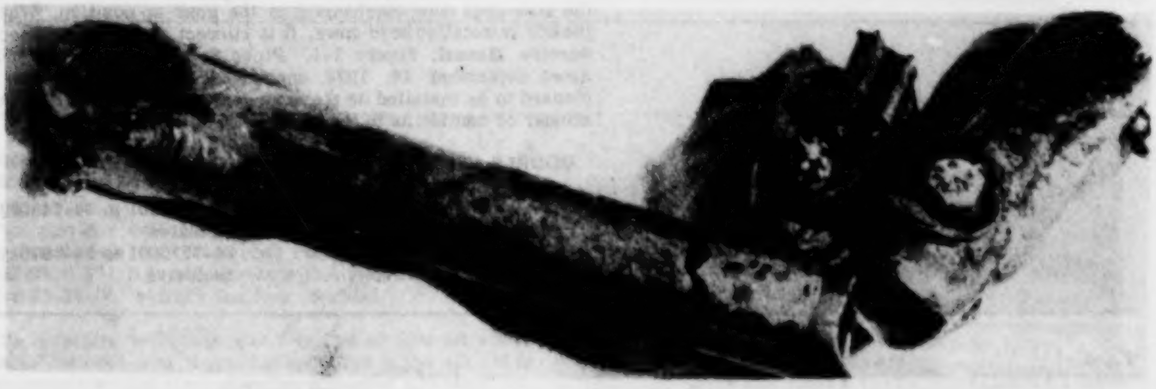
Corrosion was found in the center section of the rear spar. The corrosion was along the rivet lines and on the outer sections of the spar. The aircraft was manufactured in 1962 and had accumulated 3,210 hours.



PIPER

Piper Model PA-18A	Fuel Tank, P/N 3766	During inspection to determine the cause for fuel stains, the left wing fuel tank was found cracked just forward of the filler cap. The discrepancy was found at 3,753 hours aircraft time in service.
Piper Model PA-18-150	Horizontal Stabilizer, P/N 12790-00	Inspection performed at 6,000 hours aircraft time in service revealed that the left horizontal stabilizer leading edge tube was cracked. The crack extended 360 degrees around the tube at its mounting bolthole. This condition reportedly has been found with PA-18 aircraft with 3,000 hours or more time in service, particularly those engaged in glider towing operations.
Piper Model PA-22	Magneto Primary ("P") Leads	The cause for both left and right magneto "P" leads being charred, with melted and burned wire insulation seeping through the shielding, was traced to a broken engine-to-mount ground strap. High current flow through the "P" lead shielding-to-ground during cold weather starts caused overheating of the shielding and burning of the "P" lead wire insulation. If not detected, the condition may have resulted in grounding out either or both magnetos.
Piper Model PA-23	Main Landing Gear Upper Drag Link, P/N 19043-00	

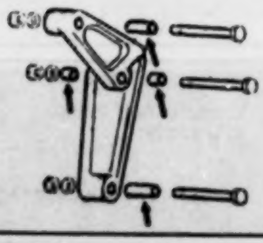
The right main landing gear upper drag link failed during taxi at 3,766 hours aircraft time in service. The tubular type link fractured at its forward end, approximately 1/2 inch aft of the down lock latch assembly attachment bolt location. Improper adjustment of the drag link assembly down latches can result in link failure. Piper Service Memo No. 62 specifies the proper adjustment procedures.



Piper Model PA-23-250	Electric Fuel Pump, P/N 33959-02	A loud bang was heard when the electric fuel pump, which is mounted in the right nacelle, was turned on. Inspection disclosed fuel dripping from the pump drain line. Further investigation revealed fuel and fuel fumes had entered the electric motor because of pump drive seal leakage. The problem was encountered at 619 hours time in service.

Piper Model PA-23-250	Fuel Cell U.S. Rubber, P/N 454321	During installation the fuel cell ripped along one side. Although the cell appeared to be in good condition, close examination revealed the fabric was rotted and could be easily torn. The fuel cell had zero time since reconditioning by Aviation Materials, Memphis, Tennessee.
Piper Model PA-23-250 (Aztec F)	Pitot and Static Lines, P/Ns 13541-21 and -22	Both the pitot and static lines in the left wing outboard of the nacelle had holes worn through them due to contact with the aileron bellcrank cables. The condition resulted in loss of pitot and static pressure to the pilot's airspeed indicator and loss of static pressure to his altimeter. The condition was detected at 1, 077 hours aircraft time in service.
Piper Model PA-32-300	Seat Belt Attach Bracket	One aluminum seat belt attach bracket was found broken. Corrosion was found on the other brackets. The brackets are subject to carpet moisture and to being stepped on by passengers. Total time - 1, 500 hours.
Piper Model PA-32R-300	Fuel Vent Hose	Reports continue to be received of finding deteriorated vent hoses on PA-28, PA-32, and PA-38 aircraft. Airworthiness Directive 79-22-02 applies to certain serial numbered PA-28 series aircraft. The AD required only replacement and modification of the fuel vent line hose on PA-28 aircraft; however, the associated Piper Kit No. 763 934V states it may also be used on PA-32 aircraft. Normally, the first sign of fuel leakage through a deteriorated hose is fuel odor in the cabin, especially notable when the tanks have been filled and the aircraft has been closed for over an hour.
Piper Model PA-34-200T	Nose Gear	The nose gear centering attach bolt can be installed incorrectly. When installed incorrectly, the nose gear can be restricted by the nose gear door mechanism in the gear up position. When the bolt is installed head down, it is correct as shown in Seneca Service Manual, Figure 7-1. Piper Service Letter No. 852, dated September 14, 1978, announced the availability of a placard to be installed on the nose gear. The placard is a reminder or caution as to the correct installation of the bolt.

MODELS AFFECTED	SERIAL NUMBERS
PA-34-200, Seneca I	34-7250001 to 34-7450220 inclusive
PA-34-200T, Seneca II	34-7570001 to 34-7870113 inclusive

Piper Model PA-38-112	Torque Link Bearings, P/Ns 542561 and 77780-05	

The nose landing gear torque link bearings have been found excessively worn with as little as 10 hours time in service. The condition was found when checking for the cause of nose wheel shimmy. If left uncorrected, cracking of the engine mount could result.

ROCKWELL INTERNATIONAL

Rockwell International Model NA-265-60	Rudder Torque Tube Assembly, P/N 265-240003

During a preflight inspection, the rudder was observed deflected to the extreme right position. Rudder pedal action would only move the rudder from neutral to the right. An inspection revealed the torque tube twisted and partially broken. Further inspection disclosed damage to the rudder to the extent that the rudder required replacement.

Cause of the damage was an air carrier 707 type aircraft that had made a turn and jet blasted this aircraft. Careful preflight attention should be given to the rudder system, especially if there has been a possibility of the aircraft being blasted by other aircraft.

SIKORSKY

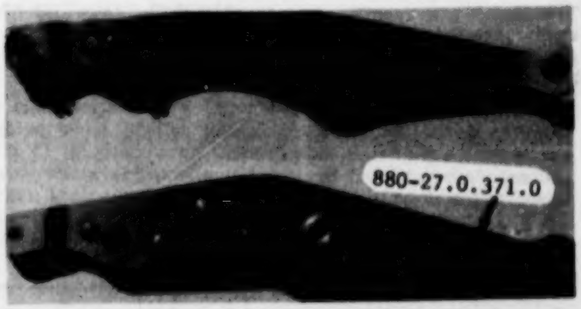
Sikorsky Models S-61A, No. 61094; S-61L; S-61N; S-61NM, No. 61454; S-61R, No. 61501; S-61V-1, No. 61271	Input Servo Valve, P/N S-6165-63552	Operators of military S-61 model helicopters have reported several AFCS input servo valves, removed for overhaul, had broken screw heads in the upper and lower end caps.
Sikorsky S-76	Tip Cap, P/N 76150-09043-050	Several reports have been received on tip caps being found cracked at the forward upper and lower attach holes.

S.O.C.A.T.A.

Socata Model MS894A	Bellcrank, P/N 880-27.0.261.0

The elevator bellcrank was found bent. The part was replaced with the reinforced elevator bellcrank, P/N 880-27.0.371.0, in accordance with Airworthiness Directive 75-26-06, Morane Saulnier (Socata).

The defective bellcrank was found on an aircraft whose serial number was above that specified in the AD. It is recommended that aircraft be inspected for this condition.



SAFETY IS THE RESPONSIBILITY OF EVERYONE IN AVIATION

ENGINES

CONTINENTAL

Continental
Model IO-520-C

Crankcase

The crankcase was found cracked from the crankshaft seal area aft approximately 4 inches. The crack was on the left side of the engine. Total engine time - 557 hours.

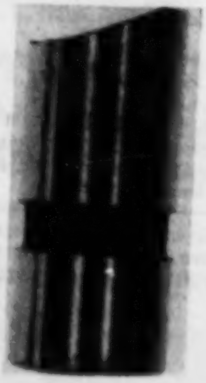
Continental
Model IO-520

Cylinder Assembly

The No. 2 cylinder cracked at the hold-down flange during takeoff. Cylinder time since overhaul - 236 hours. There is a similar report on a cylinder from a TSIO-520 with 276 hours time since new.

Continental
Model GTSIO-520-D

Valve Lifter



The engine was running rough on test flight after new engine installation. An investigation revealed the No. 5 cylinder was cold. Further investigation found one valve lifter face broken and the cam lobe damaged.

SAFETY IS AVIATION'S GREATEST ASSET

LYCOMING

Lycoming Model 0-300-H	Valve Lifters	At 303 hours total time, the valve lifters were found severely spalled, and the cam lobes were rough.
Lycoming Model O-320-H2AD	Oil Pump Housing, P/N LW-15143 and Driven Impeller, P/N LW-15999	During routine inspection, the oil pump housing paint was found burned. The pump was disassembled and the pump-driven impeller had to be pried out of its housing bore. The driven impeller shaft outside diameter and the housing bore inside diameter were badly scored and heat discolored. The pump had been in service 285 hours since compliance with Airworthiness Directive 78-12-08 and Service Bulletin No. 423. New oil pump housings have a hole drilled through the boss that accommodates the driven impeller to provide additional lubrication. Frequent inspection of the oil pump housing for evidence of overheating, burned paint, etc., is recommended.
Lycoming Model IO-360-C1C	Oil Dip Stick Tube, P/N 75735	An emersion type oil preheater was inserted in the oil dip stick hole. When the heater was removed prior to engine start, it was noted that it had burned a hole through the plastic dip stick tube.
Lycoming Model HIO-360-E1AD	Oil Filter Converter Assembly (CH48210/LW13904) Gasket, P/N CH48211	The engine oil supply was almost depleted due to a blown Champion "Spin-On" oil filter gasket that is bonded to the engine side of the converter (plate) assembly. It is believed that the converter assembly stud, which should be torqued 50 to 60 foot pounds, had loosened during a previous filter element replacement. The torque specified for the filter element bolt is 18 to 20 foot pounds per Lycoming Service Instruction No. 1319A. The converter stud tightness should be checked prior to filter element installation, and proper torque should be applied when installing the element bolt.
Lycoming Model TIO-540-J2BD	Tube Assembly, P/N LW-12098-0-100	The cause for complete engine power loss was attributed to failure of No. 3 cylinder fuel injection tube. The tube fractured adjacent to the silver soldered end fitting at its manifold "T" fitting connection. The difficulty was encountered at 1,800 hours engine time in service.
Lycoming Model LTIO-540-J2BD	Engine Damage/Propeller Lightning Strike	The right engine for a Piper PA-31-350 aircraft was disassembled for inspection following a reported inflight lightning strike of the propeller. Inspection revealed arcing burns and bearing material deposits on the crankshaft front main bearing journal; arcing on the front main bearing inside diameter; metal fusion on the hydraulic pump drive gear and Nos. 1, 2, 3 and 4 connecting rods were magnitized.
Lycoming Model TIGO-541-E1A	Ignition Harness	During installation of a new zero time ignition harness, Airborne Model 100-A33-5, it was found improperly wired. The right section of the harness was not wired in proper cylinder firing order.

PRATT & WHITNEY OF CANADA

Pratt and Whitney Aircraft of Canada Model PT6T-3	**Gas Producer Wheel, P/N 3017600**	The cause for complete engine power loss was determined to be separation of all blades from the gas producer wheel which had been in service for 4,856 hours. In another instance, the pilot reported hearing a loud roar at 62 percent N1 RPM and 30 to 50 degrees above normal ITT in cruise. Engine disassembly revealed two blades had separated from the gas producer wheel which had been in service for 4,424 hours.
Pratt and Whitney Aircraft of Canada Model PT6A-34	**Compressor Bleed Valve, P/N 3029175**	The cause for increased fuel flow and 50 degree higher ITT on the right engine, as compared to the left engine, was attributed to a malfunctioning compressor bleed valve. The valve was a later type with 180 hours time in service. Disassembly revealed the diaphragm, P/N 3021339, had a hole worn through its side due to chafing against the valve cover inside diameter.

PROPELLERS

McCAULEY

McCauley Model 1A170/FFA 7563	**Hub Cracks**	There have been several recent reports of finding propeller hubs cracked on Gulfstream American AA-5B aircraft used for training. The cracks were from 1 to 5 inches, and the average aircraft time for the five recent reports was 1,542 hours.

MAINTENANCE NOTES

NICKED-KNOCKED PROPS

Separation of 10 inches of a propeller tip during flight resulted in a cracked engine mount and other vibration damage to the engine accessories. Probable cause - a previous rock nick in the propeller. This recent incident prompted the article below.

"The metal propeller appears to be one of the most durable parts of the modern light aircraft; and indeed it is, when properly maintained. But as an instrument of thrust, it has more pressure exerted against it than any other part of the aircraft. The blades are designed and constructed in such a manner as to withstand maximum power loading, but when the shape of the blade is marred or disturbed, its inherent strength can be reduced to a point where blade failure in flight is possible. Such failure can take place entirely without warning.

"Most pilots find it hard to believe that a small cut or nick in a sturdy metal propeller can lead to a broken prop. To understand how this is possible, it helps to know something about the stress and force to which a propeller in action is subjected.

"The most obvious force is centrifugal - the rotating action which exerts an outward pull on the blades. If you imagine an enormous giant trying to draw your arm out of your socket, exerting a force some 7,500 times the weight of your arm, you can appreciate the strain on the blade.

MAINTENANCE NOTES (Con.)

"The revolving blade is also subject to a centrifugal twisting force, which may be visualized as the effect of a gigantic hand attempting to flatten the blade, exerting a force as high as 20,000 pounds per square inch. Again, the thrust exerted by the propeller results in a forward pull of the blades. Straining the engine to pull the plane out of a mudhole can result in an out-of-track prop. These two kinds of stress produce lines of force running across the face of the blade.

"But the kind of stress which is believed responsible for most blade failures, in conjunction with surface damage in piston-driven aircraft, is the vibratory stress set up by the engine forces conveyed to the propeller by the crankshaft to which it is bolted. This produces oscillating forces within the blade which change patterns as the engine RPM changes. The locations on the surface of the blade where maximum bending occurs are called nodes; at these locations the greatest amount of stress occurs. Even slight damage at these points can seriously weaken the propeller.

"Any mechanical damage to the prop creates an opportunity for blade failure. Nicks, cuts, or corrosion pits can set up stress points by interrupting line of force. Certificated mechanics are trained to round out depressions in the blade in such a manner as to minimize the concentration force at a given point.

"The ordinary preflight inspection tends to scant the propeller. The pilot may do nothing more than run his eye down the leading edge of the blade and, if nothing catches his attention, move on. What he should do, realizing the consequences of an inflight propeller failure, is to scrutinize and feel - with clean, dry hands - the entire surface of the blade. Nicks or cuts that escape the eye are often easily perceptible to the fingers. Inspection is easier and more accurate if the blade is kept clean. This is facilitated by occasional waxing with a paste wax, which helps prevent corrosion. Decals on a prop, incidentally, have been known to permit the accumulation of hidden corrosion.

"Note that the removal of small nicks or defects is not "preventive maintenance," which may be performed by the pilot or owner, but is defined in FAR Part 43 as "minor repairs," and requires the service of a qualified mechanic.

"One little nick could knock you out of the sky."

HYPOXIA CAUSES PILOT PROBLEMS

"While cruising at FL300 in a Sabreliner, the flight crew experienced minor nausea and light-headedness. Additional symptoms felt by both crewmembers: pilot - headache and aches in joints; copilot - pain in chest, headache. The pilot and copilot went on 100 percent oxygen, and the aircraft descended for landing. No fumes or odors were noted. Crew illness continued after termination of flight. Passengers experienced no symptoms at any time.

"Thorough investigation of all symptoms was conducted with negative results. Medical and laboratory tests of blood and urine of the crewmen were also negative. Most probable cause of this incident was physical displacement of normal air mixture by formaldehyde solution used in the aircraft toilet.

"Just prior to the flight, the aircraft toilet was serviced with full strength, vice properly diluted, AERO-FRESH deodorant, which contains formaldehyde. In addition, an AERO-FRESH deodorant container, which was carried aboard, was found to have a crack of sufficient size to allow vapors to escape into the cockpit. Normal internal air flows past the aircraft toilet area to the cockpit, where the cockpit area acts as a trap site. Although hypoxia was not lethal in this incident, hypoxic symptoms distracted attention of the aircrew sufficiently to cause several minor mistakes in cockpit procedures."

Maintenance Tips - Feb '80

It is recommended that chemical toilet deodorants be used in accordance with container instructions.

NOTICE TO READERS: The General Aviation Airworthiness Alerts are, for the most part, prepared from information supplied by those who operate and maintain aircraft. The FAA encourages the reporting of all malfunctions or defects that come to the attention of service or operating personnel, even though the problem has been previously reported. The Malfunction or Defect Report, FAA Form 8010-4, which supersedes Form 8330-2, is available from the local General Aviation District Office, and may be used for reporting purposes.

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ADVISORY CIRCULAR
AC 43–16

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, D.C. 20590

GENERAL AVIATION AIRWORTHINESS ALERTS

AUGUST 1980

FLIGHT STANDARDS NATIONAL FIELD OFFICE
MIKE MONRONEY AERONAUTICAL CENTER

The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported to be significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: Flight Standards National Field Office, Attn: AFO-580, P. O. Box 25082, Oklahoma City, Oklahoma 73125.

AIRCRAFT

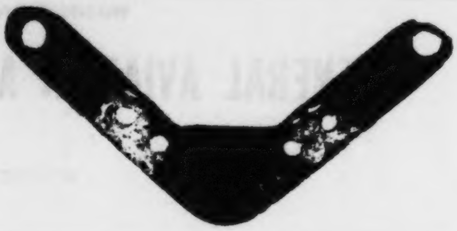
AEROSPATIALE

Aerospatiale Model SA-341G	Engine Cowl Latches	There has been a report of the forward cowl latches failing at the forward end. When the latches fail, they fall down and cut into the tail rotor driveshaft.
Aerospatiale Model SA-341G	Tail Rotor Control	During an approach, and while flying the helicopter in manual mode due to previous failure of the hydraulic power pack, the pilot lost anti-torque control, with the helicopter making three complete turns. The pilot called to passenger to push full right pedal, which he did, and control of helicopter was regained. The helicopter was landed without further incident. An investigation disclosed that the pilot's right anti-torque pedal had disengaged and swiveled 90 degrees. A rivet had sheared in the leaf spring clip, P/N 341A27-1113-00, allowing it to cock and prevent engagement of the pin in the control tube.

BEECH

Beech
Model 35

Elevator Tab Assembly



The tab horn was found severely corroded. One bolt attach hole was very close to being worn and corroded through. The aircraft was manufactured in 1947 and had accumulated 2,411 hours.

It is recommended that aircraft, especially older aircraft, be checked for similar condition.

Beech
Model 65,
A65, and 65-80
Series

Alternator Field Circuit Breakers, P/N PSM-10N

Cockpit personnel are cautioned to avoid stepping on these circuit breakers.

These floor-mounted circuit breakers are subject to damage as a result of heavy foot pressures and inadvertently being struck by persons in the cockpit. If damaged, these circuit breakers may not provide protection for the alternator field circuit and associated aircraft wiring.

Beech issued Service Bulletin No. 67-28 in September 1967, to provide information which could be used to relocate the floor mounted circuit breaker bracket to a lower, less vulnerable position to help prevent accidental damage. It is recommended this service bulletin be complied with, if instructions therein have not already been followed.

Aircraft affected: Models 65 and A65, S/Ns LC-143 through LC-270, and all airplanes prior to LC-143 that have complied with Model 65 Service Bulletin No. 11; Models 65-80, 65-A80, and 65-B80, S/Ns LD-13 through LD-350 and LD-352, and all airplanes prior to LD-13 that have complied with Model 65-80 Service Bulletin No. 2

Beech
Model 90 Series

Condition Lever Catch Plate

The engine condition levers on King Air airplanes prior to S/Ns LJ-888 and LW-331 should be examined for wear and grooving caused by extra-firm contact or rubbing action between the condition levers and the catch plate, P/N 50-524582. Condition levers with grooves deeper than 0.032 inch should be replaced along with the original catch plate. Grooves less than 0.032 inch can be radiused and smoothed out with fine emery or crocus cloth.

The catch plate, P/N 50-524582, has been replaced by P/N 99-524119, which is made of a different material. This new part number plate is the only part currently available as spares. Additional information on this subject is contained in Beechcraft King Air 90 Communique No. 83, April 25, 1980.

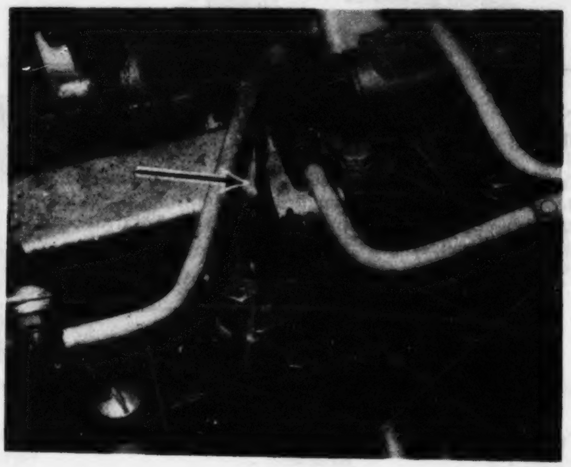
Beech
Model 95-C55

Tube Assembly, P/N 96-920001-14

Both engines were started and had stabilized at 1100 RPM. At that time, an explosion occurred in the right wing. An investigation revealed the tube assembly was disconnected from the vent tee, P/N AN824-4D, which allowed fuel fumes to leak into the interior of the wings. A loose B nut was found at the vent tee in the left wing of another aircraft. Security of all tube and hose connections should be checked at every scheduled inspection.

Beech
Models 95 and 95-55
Series through
95-C55

Rudder Bellcrank Support
Bulkhead, P/Ns 35-400366-2 or
96-420001-9

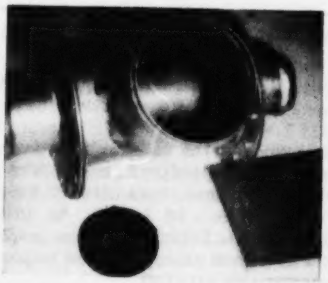


The bulkhead, located on the left side of the fuselage at station 49.0, has been found cracked or broken. When this bulkhead fails, partial loss of rudder travel may occur as the rudder bellcrank support, P/N 35-424136, is mounted on this bulkhead. These failures are believed to be attributable to ground handling of the aircraft using a tow bar and tow tractor when the aircraft gust locks are installed.

Beech Class II Service Instructions No. 0869-154, Revision 1, announced the availability of two kits which were developed to provide more durable cast type supports. Kit No. 55-4029-1S pertains to Models 95-55, 95-A55, 95-B55 and 95-B55A airplanes, S/Ns TC-1 through TC-1944 (except TC-350) and all Model 95 Travel Air series airplanes, S/Ns TD-2 through TD-721. Kit No. 55-4029-3S affects Model 95-C55, S/Ns TC-350 and TE-1 through TE-300.

Beech
Model 200

Pressurization System
Valve, P/N HE 7019



The pilot reported he was unable to pressurize the aircraft above 1.8 pounds per square inch differential on a 6.0 psi differential system. Many manhours were expended before finding two metal hinged rubber flapper valves missing from the valve assembly. Both flappers had torn away from the valve body and were found downstream. Part total time - 2,378 hours.

Beech
Model 200

Left Rudder Cable

The rudder cable was found routed through the wrong pass-through hole in the under floor bulkhead by the entrance door. Minor cable wear was evident in 325 hours of operation. A complete and thorough acceptance inspection is very important.

BELLANCA

Bellanca
Models 7EC, 7FC,
7GC, 7GCB, 7HC,
7JC, 7KC, 7GCA,
7GCBA, 7ECA, 7GCAA,
7KCAB, 7GCBC,
8KCAB, and 8GCBC

Rear Fuselage Fuel
Manifold Assembly,
P/N 2-1577-2

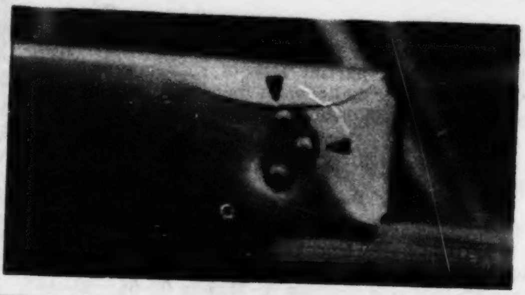
There have been several reports of fuel leakage from the fuel manifold. Cracking of the fuel manifold is probably due to overtorquing during aircraft assembly or maintenance. Aircraft times varied from 2.9 to 370 hours.

CESSNA

Cessna
Model 152

Elevator Spar

Excessive play was detected in the right outboard end of the elevator during an annual inspection. An investigation revealed that the spar was cracked. Total aircraft time - 999 hours.



Cessna
Model 172
and 182 Series

Nose Gear Attach
Brackets

Loose and sheared rivets and cracked nose gear attach brackets (upper and lower) have been found where the nose gear is attached to the firewall. In addition, the support angles located just aft of the firewall have also been found cracked and broken. It is believed this condition is caused by hard landings. Suggest this area be checked during regular inspections.

Cessna
Model 172RG

Aileron Cable

The direct aileron cable on the right side of the center pulley was found routed over the pulley bracket. The cable had several frayed strands where it passed over the pulley cable guard. Aircraft time - 98 hours. An identical situation was found on a new 172RG during an inspection prior to sale. This is a good example of the importance of thoroughly inspecting new aircraft.

Cessna
Model 188
Series

Elevator Trim Tab

During the past 5 years, there have been five reports of partial or complete separation of the trim tab horn from the elevator trim tab on Cessna Model 188 AgWagon series airplanes. All airplanes prior to S/N 18803658 are suspect.

Cessna Service Information Letter No. SE80-57 specifies an inspection for looseness of the trim tab horn and/or skin cracks adjacent to the horn. It is recommended this inspection be accomplished within the next 25 hours time-in-service, and each 50 hours thereafter. If either looseness or skin cracks are found, an improved trim tab assembly (P/N 0734600-37) should be installed.

Please submit an FAA Malfunction or Defect Report if defects are found during these inspections.

Cessna
Model TU206E

Fuel Tube

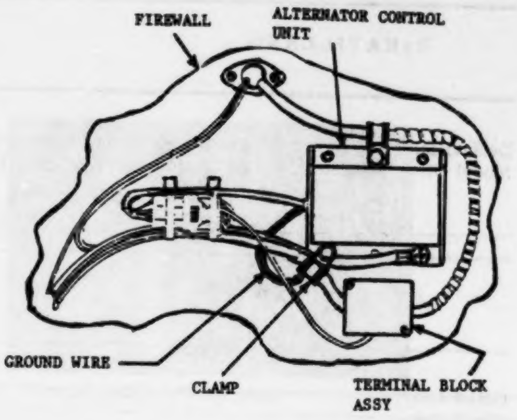
The engine quit running during flight. An investigation disclosed the fuel tube from the pump to the manifold had a hole chafed into the tube. The tube was not clamped and had been rubbing the alternator bracket. The tube was almost worn through from the same cause on another aircraft.

Cessna
Models U206,
210N, T210N and
P210N

Alternator Output
Wire Failures

Reports of alternator output loss have been received. Some of these reports cite the occurrance of complete electrical failures due to breakage of the alternator output wire at the firewall mounted terminal block. Under certain conditions, battery endurance can be severely limited. Note: If the ammeter indicates a high rate of discharge after an alternator failure, turn the battery switch off until actually required for emergency radio transmissions or final instrument approach.

Cessna has issued Service Information Letter No. SE79-44, to provide instructions to add a support clamp at the terminal block. The addition of the clamp transfers the weight of the alternator wires to the firewall. It is recommended this service letter be accomplished on the following affected airplanes: Models 206, S/Ns U20604650 through U20605120; Models 210N and T210N, S/Ns 21062955 through 21063472; Model P210N, S/Ns P21000151 through P21000317.



VIEW LOOKING AFT, UPPER FIREWALL

Cessna
Model P210N

Emergency Door

The support cylinders for the emergency door on 1978 and 1979 model airplanes are pressure charged. If replacement of these cylinders is ever necessary, the cylinders should be discharged prior to disposal. Revision 2 of the P210 Service Manual includes proper procedures to be used to depressurize the cylinders to avoid injury to personnel. Cessna Service Instruction Letter No. SE80-32 also pertains to this subject.

Cessna
Model 310R

Prop Anti-Ice Wire
Harness

During a routine inspection, four of the six harness wires were found broken. It was reported that the harness is either too long or inadequately clamped, and centrifugal motion forces the wiring outward, causing it to rub against the inside of the propeller spinner. Total aircraft time - 288 hours.

Cessna
Models 402C
404, 414A, 421C and
441

Main Landing Gear Tires

There have been a few recent occurrences where one of the main landing gears could not be lowered because the tire had become stuck in the wheel well.

The use of new (non-recap) tires of the same make and ply-rating, as originally installed, is one way to prevent the occurrence of this problem. If retreaded tires are used as replacements, it is recommended a retract check be performed to assure the tire will clear the wheel well.

Cessna
Model 500

Shoulder Harness
Inertia Reel,
P/N CM4023

The plastic guide on the front of the Pacific Scientific Model 0107125 inertia reel had separated from the hold down edges and allowed the belt material to rub against the metal. The belt was badly frayed across 25 percent of the belt width.

It is suggested that shoulder harness belts be periodically examined for wear. The belt must be pulled completely out of the rewind reel to properly make this inspection.

DeHAVILLAND

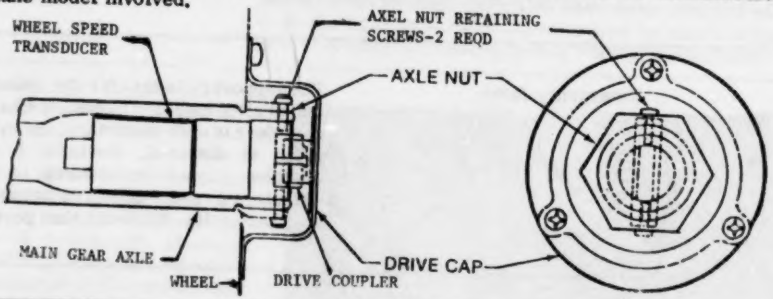
DeHavilland **Model DHC-6-300**	**Elevator Jack Screw Assembly Cable Guard, P/N C4C1957-1**	**The elevator trim system was reported inoperative following takeoff. Subsequent ground inspection disclosed the trim tab cable became wedged between the jack screw cable spindle (drum) and the cable guard.**

GATES LEARJET

Gates Learjet
All Models

Axle Nut Retaining Screws

A recent Gates Learjet Service News Letter contained an article which cautioned maintenance personnel to ensure that the correct axle nut retaining screws are used whenever the axle nut is reinstalled. Retaining screws that are too long may damage the wheel speed transducer drive coupler. The correct retaining screws can be identified from the parts catalog for the specific airplane model involved.


WHEEL SPEED TRANSDUCER
AXEL NUT RETAINING SCREWS-2 REQD
AXLE NUT
MAIN GEAR AXLE
WHEEL
DRIVE COUPLER
DRIVE CAP

Gates Learjet
All Models

Flight Control Cables

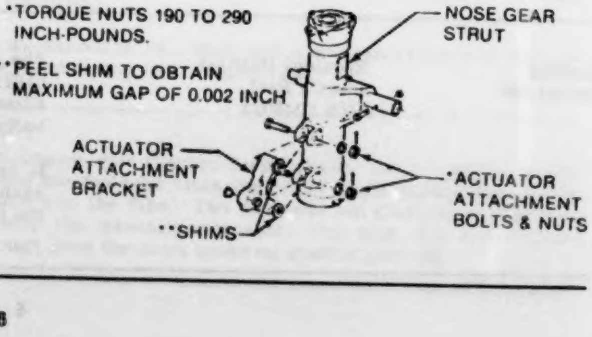
The following information is contained in Gates Learjet Service News Letter No. 47, dated March 1980:

> **"All Learjets incorporate corrosion resistant steel control cables which do not require additional protective coating. The cable is lubricated internally during manufacture to improve its wear and friction characteristics. Excessive wear on flight control cables can be caused by applying a coat of grease to the cables or by washing the cables with solvents.**
>
> **"Coating the cables with grease is unnecessary and may result in a shorter service life due to abrasive sand and dirt particles that may become embedded in the grease. Washing the cables with solvent or cleaning fluids can remove the internal lubricant. Therefore, maintenance personnel should refrain from applying grease to the cables and washing the cables with solvents or cleaning fluids."**

Gates Learjet
All Models

Nose Gear Assembly

Horizontal scratch marks have been found on the nose gear strut piston. It is believed these scratches are the result of improper torque and shimming of the nose gear actuator bracket attach bolts. If these type scratches are found, Gates Learjet recommends the actuator attach bracket be correctly reinstalled per instructions in the maintenance manual for the particular airplane model.


*TORQUE NUTS 190 TO 290 INCH-POUNDS.
**PEEL SHIM TO OBTAIN MAXIMUM GAP OF 0.002 INCH
NOSE GEAR STRUT
ACTUATOR ATTACHMENT BRACKET
*ACTUATOR ATTACHMENT BOLTS & NUTS
**SHIMS

GREAT LAKES

Great Lakes
Model 2T-1A-2

Wing Center Section

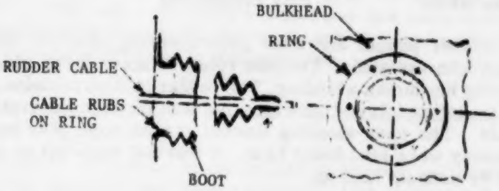
The center section ribs were all found broken or cracked where they pass over the front and rear spars.

GULFSTREAM AMERICAN

Gulfstream American
Model G-164A

Rudder Cable Boot Mounting
Ring, P/N 1367-3

Inspection of aircraft with 2,000 to 4,000 hours time in service revealed the rudder cables were rubbing against the inside diameter of the cable boot mounting rings. The rings are riveted to the fuselage bulkhead, duct seal assembly, P/N A1362-3, at station 219 3/8. In one instance, a rudder cable had worn a hole completely through the flared portion of a ring.



HELIO

Helio
Models H-250, H-295,
HT-295, H-391,
H-391B, H-395 and
H-395A

Aileron Push-rods,
P/N 391-010-421

There have been three reports of the aileron push-rods rubbing against the cutout on the aft portion of the wing. This rubbing resulted in the push rod becoming badly worn.

It is recommended the aileron push-rods be checked for interference at the wing cutout each required inspection. Please submit an FAA Malfunction or Defect Report if this condition is found in other airplanes.

HILLER

Hiller
Model FH-1100

Chain Assembly,
P/N 24-32101

The anti-torque control chain assembly failed, which allowed the cable assembly, P/N HS1053-33, to wrap around and shear the tail rotor drive shaft. A successful landing was made from approximately 40 feet altitude.

LAKE

Lake Model LA-4-200	Nose Landing Gear Strut, P/N 2-4405	A recent nose gear up landing was attributed to improper servicing of the Oleo strut. Lake General Maintenance Manual, section 3, page G-2 (Rev 77), and Decal 2-7003-1 (left side panel in nose wheel well) pertain to this subject.
Lake Model LA-4-200	Wing Attach Fitting, P/N 2-3251-30	During an annual inspection, the right rear attach bolt was found loose. The bolt was removed and the hole in the fitting was found to have been double drilled.

MOONEY

Mooney Model M20K	Tube Assembly, P/N 720005-501

The rudder pedals and nose gear steering attach to the torque tube assembly. The tube broke adjacent to the nose steering lug during a landing. The rudder control remained with the left pedals and nose steering was through the right pedals. The nose steering linkage and the nose gear leg assembly were also found bent. It was not reported as a hard or unusual landing.

PIPER

Piper Model PA-23-250 (Aztec F)	Rudder Cable	The right rudder cable was found moderately worn at fuselage station 153.88 where it passes through a hole in the bulkhead beneath the rear baggage compartment floor. The discrepancy was found at 68 hours aircraft time in service.
Piper Model PA-28-151	Battery Ground Cable	The starter was intermittant and would hardly turn the engine. During the investigation for cause, the aluminum battery ground cable was found corroded, burned, and several wires of the cable were broken at the battery terminal. There have been other reports of identical problems with the aluminum cable.
Piper Model PA-28R-201T	Engine Mount	During an inspection of an aircraft with 110 hours total time, the engine mount-to-firewall bolts were found loose one to two turns. The operator found four other aircraft with the same condition. It is recommended that aircraft be inspected and bolts torqued to specifications.

Piper Model PA-38-112	Elevator Trim Wheel Assembly, P/N 77878-02	The elevator trim wheel jammed during flight. Subsequent ground inspections revealed that the spring, P/N 487360, inside the elevator trim control wheel housing, had dislodged causing the control wheel to jam. The aircraft had been in service for 88 hours and a new type trim wheel had previously been installed per Piper Service Letter No. 865.
Piper Model PA-38-112	Fuel Tank Vent Line Hose, P/N 77910-19	At 606 hours aircraft time in service, fuel fumes were noted in the cockpit following stall maneuvers. Subsequent ground inspection revealed the fuel tank vent line hoses in both wings were rotted and cracked, allowing fuel to leak into the wings. A similar condition was found during 100-hour inspection of another aircraft at 782 hours time in service.
Piper Model PA-38-112	Lower Cockpit Frame Assembly - Rear Spar, P/N 77467-02	Inspections following minor damage to wing tips have revealed buckling to the rear wing spar web inboard end, and the "lower cockpit frame rear spar" or fuselage frame assembly. Rear spar web distortion occurs adjacent to its hinge or fuselage attachment fitting. The lower cockpit frame assembly rear spar distortion occurs immediately inboard from its rear spar fitting, P/N 77467-02. The frame distortion has been noted on the side where the wing tip was damaged, and to a lesser degree, at the opposite side of the frame assembly.
Piper Model PA-38-112	Propeller Spinner Bulkhead, P/N 77710-05	Many reports of cracks in the propeller spinner bulkheads of PA-38-112 aircraft have been received. The reports indicate a probable cause to be contact of the propeller trailing edge with the bulkhead. One crack 3 inches long, and another 2$\frac{1}{4}$ inches in length radiating inward from the bulkhead outer edge, were detected at 76 hours aircraft time in service.
Piper Model PA-38-112	Tube Assembly Flap Handle, P/N 77855-06	The wing flaps would not lock in full down position. Inspection disclosed the flap control handle tube had failed at its lower end. The problem occurred at 385 hours aircraft time in service, and was the third flap handle failure experienced by the operator.

Piper
Model PA-44-180

Aileron Push Rod

The attach bolt through the fork and the aileron bellcrank was too tight, which caused the fork to bind and bend the push rod. The bending of the push rod eventually caused the rod to break. Total aircraft time - 370 hours. It is recommended that aircraft be checked for similar condition.

Piper Aerostar Model 601	Wing Corrosion	Corrosion was found on the right wing between the wing root and the nacelle. Eight spots were found where the corrosion had gone completely through the skin.

VARGA

Varga (Morrisey) Model 2150A	Spring-Exhaust Support	Both exhaust stack support springs were found rusted and broken during a 100-hour inspection. The right support had chafed into the fuel pump inlet line. The springs are made from a mild soft steel, and are subject to extreme corrosion and vibration. It was reported that these springs consistently average no more than 200 hours time in service before failing.

COMMUNICATION/NAVIGATION EQUIPMENT

KING

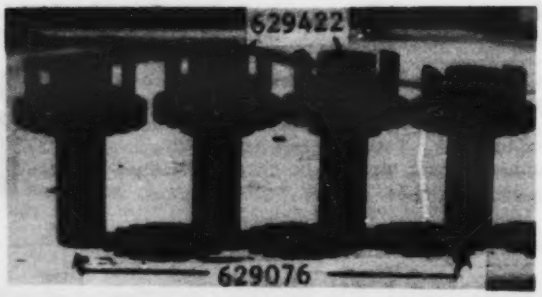
King Radio Model KX 170B/175B Series	VOR Error	When installing a Model KN73 and KN77 VOR/NAV converter with the Model KX 170B/175B Nav/Comm transceiver, a VOR error is introduced in all .05 KHz Nav channels above 112MHz. King recommends modifying the Nav/Comm transceivers by adding an isolation diode, CR114, to the glideslope 50 KHz line. Procedures for this modification may be found in King Service Bulletin No. KX170B/175B-4, KX170BE/175BE-4, dated August 15, 1974.

ENGINES

CONTINENTAL

Continental Model IO-520-B2A	Magneto Drive Gears

The factory remanufactured engine had magneto drive gears, P/N 629076, installed. These drive gears are approximately 3/8 inch shorter than P/N 629422 drive gears, which should have been in this engine according to the parts manual. The incorrect gears allowed the magneto drive coupling to slip out of the neoprene bushing, which resulted in retarding the timing approximately 35 degrees. If P/N 629422 magneto drive gears are installed in the wrong engine, case wear can result. It is suggested the latest parts manual be checked if there is any doubt as to the correct magneto drive gears in your engine.



In order to ensure continued receipt of the "Alerts," an address change must be reported to the FAA district office under which you exercise your certificate.

PRATT & WHITNEY OF CANADA

Pratt & Whitney Model PT6T-3	Oil-to-Fuel Heater Tube, P/N 3019630	Loss of oil and engine seizure was attributed to failure of the oil-to-fuel heater tube assembly at the lower coupling nut. The failure occurred at 1,658 hours time since engine overhaul.
Pratt and Whitney Model JT12A-8	Accessory Gear Box Insert, P/N 488879	The operator had to shut down the engine due to loss of oil. An investigation revealed the oil pressure transmitter insert screw had stripped.

MAINTENANCE NOTES

VOLCANIC ASH

Volcanic ash from Mount St. Helens has been analyzed and found to be abrasive and contain corrosive materials such as sulfuric acid and the salts and acids of chlorine and fluorine. Depending on the location of the volcanic ash fallout, the particle size ranges from .5 to 100 microns. Most aircraft filters will only screen out particles larger than 15 microns.

The ash will probably be encountered as a fine powder, similar to talcum, and light gray in color. This powder has been reported to set similar to cement when dampened. Acids tend to collect at the interface of particle and the aircraft structure and cause corrosion. Although volcanic ash may not be visible on the structures, acids may still exist and cause corrosion. It is recommended that all aircraft that have been exposed to volcanic fallout be decontaminated in accordance with the instructions of the aircraft manufacturer and those from the FAA.

FUEL CONTAMINATION

The pilot reported it took more fuel than normal to keep the cylinder head temperature out of the red area. A fuel check revealed approximately 12 percent jet fuel in the aircraft fuel tanks. Engine inspection revealed insufficient intake valve clearance because of valve stretch. The engines were removed for overhaul. Total engine time on this PA-31-350 aircraft - 1,067 hours.

This same condition was found on another PA-31-350--jet fuel in the aircraft fuel tanks - intake valve stretch - both Lycoming 540 engines with 210 hours total time removed for overhaul. How the jet fuel got into the PA-31 fuel tanks is unknown. This time it was a very expensive error - next time!!!???

UNPROTECTED ELECTRICAL TERMINALS

During climb in a Beech 18 aircraft, fire errupted behind the copilot seat. The fire was finally extinguished by a passenger and the pilot, using a portable fire extinguisher.

An investigation disclosed a pressurized aerosol can of furniture polish (used onboard as a window cleaner) had contacted an uncovered electric terminal strip. The can caused a short circuit between two terminal studs, which burned through the can wall and ignited the contents. The can burned like a blowtorch, igniting seat upholstery and aircraft covering. This incident could have been catastrophic had not the passenger and pilot taken immediate and proper action.

It is recommended a special emphasis be made by pilots/operators and maintenance personnel to insure there are no uncovered or unprotected electrical terminal studs exposed in aircraft. Also, all pilots/operators should be aware of the danger involved when carrying pressurized aerosol cans in aircraft.

NO INVESTMENT PAYS BETTER DIVIDENDS THAN SAFETY.

VIBRATION PROBLEMS

During paint removal prior to repainting the aircraft, a large dent, approximately 2 1/2 inches in diameter and 9/16 inches deep was found in the propeller spinner. The dent had been filled with "bondo." The owner had complained of vibration since the aircraft was new. Total aircraft time - 300 hours.

The vibration checklist is being published again to possibly assist in finding and eliminating vibration problems.

VIBRATION CHECKLIST

Vibration can be transmitted from the engine to the aircraft structure from points of contact between engine components and the cowl, firewall, or engine mount. The following is a list of areas to be checked to ensure the engine is isolated from the aircraft structure or to minimize the effect from components which must bridge between engine and structure. The list also includes engine conditions for smooth operation which affect airframe vibration.

BAFFLE-TO-COWL CLEARANCE
Check inside of cowl for chafing; trim metal baffle as required. Repaint affected area and reinspect next flight.

EXHAUST-TO-COWL
Check exhaust stack for clearance where it extends through cowl. Check stack and cowl for signs of interference. Enlarge cutout in cowl as required.

COWL-TO-FIREWALL INTERFERENCE
On models utilizing shock mounted cowls, positive clearance should be ensured between the cowl and the firewall. Typical clearances where the cowl overlaps the fuselage run on the order of .06 to .13.

INDUCTION HOSE CLAMPS
Check induction hose clamps for clearance with the engine mount structure. Look for marks on engine mount. Rotate clamps as required.

BREATHER AND OVERBOARD DUMP LINES
Check all overboard dump lines from the engine for clearance with the firewall, cowl, and/or cowl flap openings. Check cowl flap in both the open and closed positions. Reposition and reclamp to clear.

ENGINE ISOLATORS
a. Check engine isolator bolt lengths. Bolts which are too long will shank out and will not apply the correct pressure to the isolator. Bolts must be removed to be properly checked. Replace with next size shorter bolt if barrel nut has shanked out.

b. Check isolators for aging and deterioration. Replace if rubber is separated from metal pad, there is cracking of the rubber, and/or pronounced set of the rubber pad.

PROPELLER TRACK
a. Check propeller track; set up reference point at tip of propeller, rotate blades past this point. Blades should not be more than 1/16" out of track.

b. Check propeller for loose or binding blades, loose or missing attach bolts.

c. Check propeller spinner for loose, damaged, or deformed parts and visual wobble.

d. Balance suspected prop if roughness continues.

ENGINE CONTROLS
a. Engine controls should be routed to provide a gentle curve between engine and firewall. They should not be stretched tight. Pull control through firewall and reclamp.

b. Check engine controls behind engine for contact with engine. Reroute and reclamp controls, as required, to clear.

STARTER CABLE
Check starter cable for clearance with cowl and that a loop is provided for flexing.

ENGINE CONDITION
a. Check spark plugs for fouling, improper gap, and for proper type.

b. Check condition of ignition wiring.

MAINTENANCE NOTES (Con.)

c. Check condition of points.

d. Check magneto timing.

e. Check engine compression.

f. Check fuel injection engines; check fuel injector nozzles for restriction and correct size. Check fuel pump and mixture unit settings; check distributor valve for calibration and proper flow.

g. On turbocharged engines, check nozzle shrouds for leakage; check air induction ducting for leaks, and/or rubber couplings for proper seal.

h. On turbocharged engines, check turbocharger for foreign object damage, binding, and worn bearings.

ANTENNA VIBRATION

Check antenna if vibration tends to be related to airspeed rather than power setting.

WHEEL BALANCE AND BRAKE DISC TRUENESS

Wheel balance and brake disc trueness can be sources of vibration during the ground run on some aircraft. These should be checked as a part of the vibration diagnostic process if conditions indicate that they may be a problem.

SPECIAL NOTICES

EMERGENCY LOCATOR TRANSMITTER INFORMATION

Airworthiness Directive 79-05-02 directed owners of civil aircraft to remove ELTs which were powered by Lithium Sulfur Dioxide batteries. Since that time, many aircraft owners have installed ELTs of a different make and model. Installers and owners of ELT systems which differ from the system originally installed should determine: (1) that all associated parts such as antenna connectors, cable plugs and remote switches meet the standards of TSO C91; (2) that no mismatch of system components exist that could prevent the ELT system from performing its intended function; and (3) functionally test the ELT system.

FAA Advisory Circular 91-44 provides guidelines for installation and testing of ELTs.

UNAPPROVED MODIFICATIONS

Unapproved modifications have been found in the speed warning systems of certain turbojet aircraft. The modification is a switch, or could be a circuit breaker, installed in the speed warning horn system, which can mute the warning horn for air speed and other warning devices connected to the same circuit.

All flight crews are not aware of the unauthorized switch or its function, and could be operating without knowledge that certain warning systems are inoperative. Under those conditions, the hazards to safe flight are obvious.

Maintenance personnel report that the unapproved switch installations have caused difficulty in analyzing warning system malfunctions because they are hidden, unmarked, and not recorded in the aircraft maintenance records or included on aircraft system diagrams.

Owners/operators of turbojet aircraft should have authorized persons inspect their aircraft and determine that no unapproved switch installations exist.

If any switch is found, the owner/operator should have the switch removed and assure that the speed warning horn and other associated warning systems perform as required, and that proper entries have been made in the aircraft maintenance records.

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AC 43–16

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, D.C. 20590

GENERAL AVIATION AIRWORTHINESS ALERTS

SEPTEMBER 1980

FLIGHT STANDARDS NATIONAL FIELD OFFICE
MIKE MONRONEY AERONAUTICAL CENTER

The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported to be significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: Flight Standards National Field Office, Attn: AFO-580, P. O. Box 25082, Oklahoma City, Oklahoma 73125.

AIRCRAFT

AEROSPATIALE

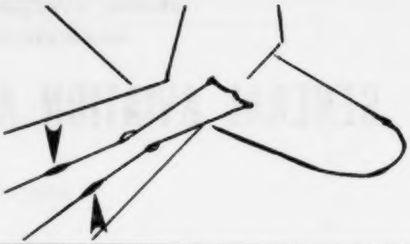
Aerospatiale Model SA-341G	Auxiliary Fuel Tank	The auxiliary fuel tank mounts were found pulled through the baggage compartment floor. One mount had completely pulled through the honeycomb structure. The fuel tank is suspended from the baggage floor utilizing four 2-inch washers. Apparently, the washers do not cover enough surface to support the load.

NOTICE TO READERS: The General Aviation Airworthiness Alerts are, for the most part, prepared from information supplied by those who operate and maintain aircraft. The FAA encourages the reporting of all malfunctions or defects that come to the attention of service or operating personnel, even though the problem has been previously reported. The Malfunction or Defect Report, FAA Form 8010-4, which supersedes Form 8330-2, is available from the local General Aviation District Office, and may be used for reporting purposes.

AYRES

Ayres **Model S2R**	Turnbuckle Barrel, P/N AN155-32S

At 781 hours time in service, the turnbuckle barrels were found corroded and the barrel ends were split.



BEECH

Beech **Model D18S**	Fuel Lines, P/N 407-189684-3 and -4	Fuel leaks resulted from holes chafed into the fuel lines by being in contact with adjacent heater ducts. The fuel lines were replaced and the heater ducts were rerouted. It is recommended that older aircraft be inspected for similar conditions.
Beech **Model V35B**	Instrument Light Bulbs	Smoke was detected coming from the instrument panel during a short flight of less than 30 minutes. After landing, it was determined that the instrument light bulbs were oversize and caused the plastic lens covers to overheat and smoke.
Beech **Model 95-55** **Series**	Electrical Wire Bundle	A wire bundle, located behind the left engine, was destroyed by fire because of an electrical short which was due to chafed wire at a support clamp. It is recommended the area aft of the firewall be carefully inspected for conditions such as this at least annually.

BELL

Bell **Model 206B**	Bolt, P/N AN174-7A	Two bolts were found loose at the No. 1 tail rotor driveshaft coupling to the adapter. Wear was evident on the washers, bolts, and coupling. The torque stripes on the bolts were not damaged. Total aircraft time - 276 hours.
Bell **Model 206L**	Oil Cooler Impeller, P/N 206-061-432-031	Cracks are being found in the outboard edge of the spoke radii of the oil cooler blower impeller hub. Four of the improved cooling impellers have been found cracked by one operator.

In order to ensure continued receipt of the "Alerts," an address change must be reported to the FAA district office under which you exercise your certificate.

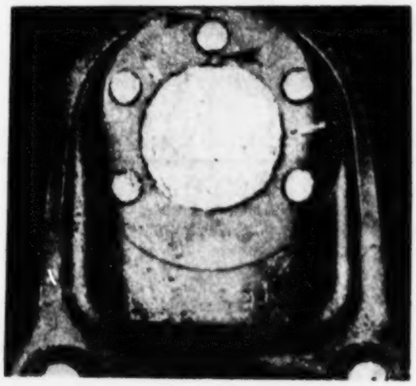
BELLANCA

Bellanca Model 8GCBC	Tail Post	During an inspection to determine the cause for wrinkled fabric, the tail post was found broken approximately 1-1/2 inches above the bottom of the post. The aircraft had a factory installed tow hitch and was used to tow sailplanes. Total aircraft time - 956 hours.
Bellanca Model 14-13-2	Main Gear Strut	The left main gear strut separated from the aircraft during the takeoff roll. An investigation disclosed approximately 30 percent of the mounting weldment had been cracked previously.

CESSNA

Cessna Model 172	Carburetor Air Filter, P/N C294510-0301	The filter paper was packed so tight and glued together that air flow was restricted, causing rich mixture and loss of RPM. There was an increase of 250 RPM after the filter was replaced. This was the second filter recently found in this condition by the reporting mechanic.
Cessna Model 188 Series	Aileron Control System	Reports continue to be received regarding worn/frayed aileron cables. Airplanes used in agricultural type operations probably average a much higher aileron usage rate per flight hour than experienced in any other type of flying. Therefore, aileron system component wear problems can be expected to occur earlier in the life of agricultural airplanes than those used in other types of flying. It is recommended the aileron cables be carefully checked at each inspection, paying particular attention to locations where the cables pass through pulleys and fairleads. In addition, all bolts used in the aileron system should be checked for wear and security.
Cessna Model 188B	Brake Torque Plate	

Cracked torque plates have been reported on C-188 aircraft utilizing 800X8 wheels and brakes. The mechanic who submitted this report advised of replacing cracked plates on seven aircraft.



Cessna
Model 206, 207 and
210 Series

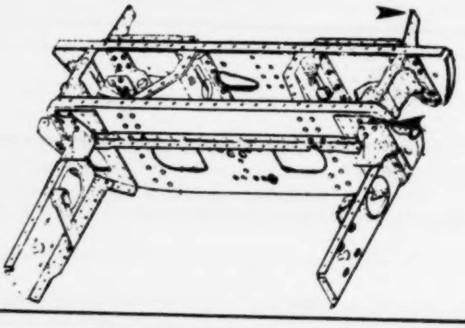
Elevators

There have been several reports of corrosion being found in the elevator trailing edge. This corrosion is apparently caused by water retention in the styrofoam type stiffening material. It is recommended this area be checked at scheduled inspections.

Cessna
Model 210 through
210J

Main Gear Actuator
Bulkhead Assembly

The bulkhead doublers, P/Ns 1211422-3 and -4, located at fuselage station 68.33 were found cracked at bolt attachment holes. The cracking appeared to originate at each hole where the bolthead had pulled into the doubler.



Cessna
Model T210M

Oil Line

The metal braid on the oil line was found discolored during an annual inspection. An investigation revealed the metal braid had burned away and the inner hose had burned partially through. Further investigation found a melted reinforcing wire in the air duct. The melted air duct wire was on the end near the oil line. Apparently, the air duct, which was resting on the alternator, had acted as a ground and had been arcing on the oil line. The pilot had observed a "nervous" ammeter needle for some time. Airworthiness Directive 79-25-07 instructions had not been carried out on this aircraft. Installing the ground strap in accordance with the AD and repositioning the air duct appeared to have solved the problem.

Cessna
Model 340A

Propeller Control,
P/N 9910269-15

The left engine propeller control housing separated from the end fitting. The housing on the right engine was damaged. Apparently, heat radiated by the exhaust pipe is weakening the housing and causing the problem. The submitter recommended protecting the control with a heat shield. Part total time - 366 hours.

Cessna
Model 441

Aileron Cable,
P/N 5715096-65

During an inspection, the right aileron cable was found rubbing on the phenolic block which is fastened on top of the diverter duct, P/N 5715451-2. Two strands of the cable were found worn through. Inspection of the left cable found the same condition existed. Total aircraft time - 264 hours.

Please submit an FAA Malfunction or Defect Report if this condition is found in other aircraft.

ENSTROM

Enstrom Model 280C — **Lamiflex Bearing, P/N 28-14310**

A separated lamiflex bearing was reported as the cause for lateral vibration during cruise, and vertical vibration during hover. Aircraft total time - 1, 035 hours.

There have been several reported separated lamiflex bearings. Some were found while accomplishing instructions contained in Enstrom Service Letter No. 0037. Aircraft times were from 90 to 1, 087 hours.

GATES LEARJET

Gates Learjet Models 35 and 36 Series — **Cold Weather Starting**

The following information was originally published in Gates Learjet Service News Letter No. 37. dated March 1979, and has been repeated in Service News Letter No. 44 for November/December 1979:

> "Gates Learjet Models 35 and 36 series aircraft are equipped with a starting pressure regulator (SPR) feature of the fuel computer to provide increased fuel scheduling during engine starts. During cold weather, when oil viscosities increase and battery outputs decrease, causing slower than normal acceleration (particularly N_1 RPM), this feature is very useful in obtaining satisfactory light-off. Normally, this feature is not required after light-off, unless ambient temperatures are very low (below zero degrees Fahrenheit).
>
> "During cold weather starts, after light-off, turbine temperatures have a tendency to increase more rapidly than normal, due to increased spool-up times. For this reason, operators must closely monitor turbine temperatures so that the start can be aborted if turbine temperatures seem likely to exceed the start limit (860 degrees Centigrade).
>
> "Flight manual procedures for starting the engines include operation of the SPR feature and information relating to its use during cold weather starts. Additionally, as noted in the flight manual. Gates Learjet recommends an APU be used when ambient temperatures are below 25 degrees Fahrenheit."

Gates Learjet Models 35 and 36 — **Engine Starter Installation**

The following cautionary note has been added to the starter installation procedures in the Maintenance Manual for the Model 35/35A and 36/36A airplanes. The note is also referenced in Gates Learjet Service News Letter No. 47, dated March 1980:

> "Install starter leads so that maximum clearance is maintained between starter lead terminal shank and starter housing. Terminal shank contacting starter housing during starter operation will result in starter damage."

THE MOST VALUABLE GIFT YOU CAN GIVE ANOTHER IS A GOOD EXAMPLE.

GULFSTREAM AMERICAN

Gulfstream American Model AA-5A	Aileron Stop, P/N 5603074-1	During an inspection for compliance with Airworthiness Directive 79-22-04, the upper leg of the right aileron stop was found broken. The part was stamped with the word "TOP" on both sides. The failure occurred through the vertical line "T" on one side and the letter "P" on the opposite side. Total aircraft time - 1,300 hours.

Gulfstream American
Model AA-5B

Bird's Nest

While waiting for takeoff clearance, the pilot noticed sparks and smoke coming from the engine compartment. An inspection revealed a bird's nest on the front side of the exhaust muffler. The cowling, alternator, and starter wires were damaged. The nest could not be seen on preflight inspection.

An investigation to determine the source of smoke and fire in another AA-5B revealed a bird's nest below the alternator and crankshaft area.

NOTE: The following article, reference the same problem, was published in Alerts No. 13, August 1979:

> "Birds' nests have been found between the nose cowl and the engine cowl in the heater duct. The birds apparently enter the area through the propeller opening and go down between the cowling to build their nests. The heater duct is inaccessible to visual inspection without pulling the nose cowl. This problem could apply to other similar Gulfstream American aircraft. The submitter recommends an inspection plate be designed and installed on the front cowl so the area can be inspected. It is also recommended the openings be plugged if the aircraft is inactive, even for a short period of time, during the nesting season."

Gulfstream American Model GA-7	Balance Weight, P/N 7CS10231	The balance weight in the left elevator outboard tip was found loose. The retaining anchor nut had broken, which allowed movement of the weight. The holes in the balance weight and in the elevator support were elongated to the point that replacement of the parts was required. The balance weight had been replaced 216 hours previously.

LAKE

Lake Model LA-4-200	Pitch Control Cable, P/N 2-6300-17	During inspection, an operator found the pitch control cable "exploded." After installing the new cable, it also "exploded." Further investigation revealed that the ground strap from the engine mount became loose and contacted the cable. When the engine was started, the starting current passed from the ground strap to the cable, causing it to explode.

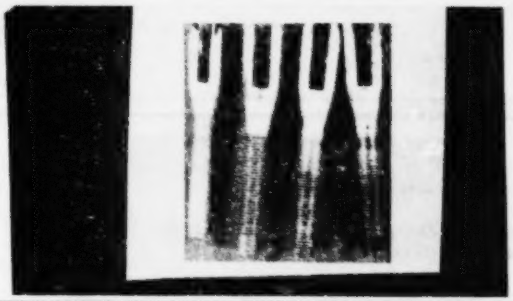
LOCKHEED

Lockheed Model 1329	Engine Mount Bolt, P/N P01-52009-3	Two of four engine mount bolts were found cracked at the bolthead radius to the shank. This was the second Jetstar 731 conversion with cracked mount bolts found by one repair station. The bolts had not been removed since installed 492 hours previously.

PIPER

Piper **Wing Lift Strut Fork**

There have been several reports of finding cracks in the wing lift strut forks when complying with the Emergency Airworthiness Directive dated April 25, 1980. Cracks have been found in the flat portion of the fork and also in the threaded area. Reports have been received on several different model Piper aircraft listed in the AD. Aircraft times have been from 770 to 1,640 hours.



Piper
Model PA-18A

Fuel Strainer Cover,
P/N 14428-00

Investigation of a fuel seep revealed a crack in the outlet port of the fuel strainer cover. Records indicate this aircraft was manufactured in 1957 and had accumulated 4,812 hours.

There was an identical report on a Piper J5C which was manufactured in 1942. Age of the parts may have been a contributing factor.

Piper
Model PA-23-160

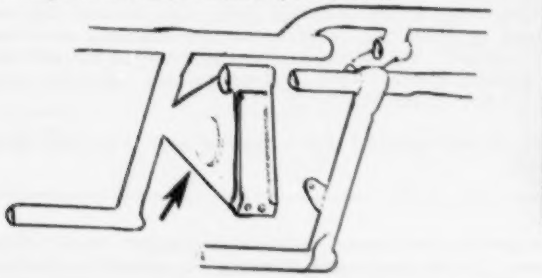
Horn Assembly,
P/N 17059-00

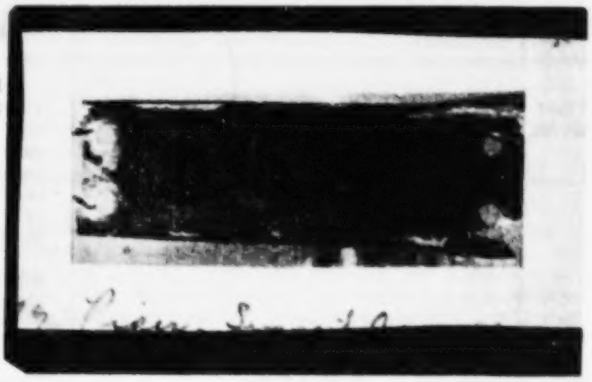
Heavy rudder vibration was noted during takeoff. The aircraft was landed on the remaining runway without further incident. The pilot stated he was unable to control the rudder with the rudder pedals. An investigation disclosed the rudder trim tab horn had failed and had pulled one of the ribs and skin loose. The loose tab set up rudder oscillation, causing the rudder to contact the inboard ends of both elevators. Further investigation revealed the trim tab horn had been cracked at the rivets on the forward end for some time. The cracked area was covered by a bracket and could not be seen by visual inspection. Total aircraft time - 3,245 hours.

Piper
Model PA-28-140

Support Assembly,
P/N 63451-00

The rudder bar support assembly was found broken and cracked at the bolt areas. The aircraft is used for student training and had accumulated 2,693 hours.





Piper
Model PA-31-325

Elevator Control

The cotter pin was missing from the top control cable bolt in the elevator bellcrank assembly. The nut was loose and the bolt had started to back out. Total aircraft time - 196 hours.

Piper Model PA-31-350	Oil Pressure Tube, P/N 41913-00	Three quarts of oil were lost during a 20 minute flight. The oil pressure tube was found leaking where it had chafed the air conditioning condenser scoop actuator arm. Total aircraft time - 40 hours. Piper Service Bulletin 643, dated July 23, 1979, does not include this aircraft serial number. It is recommended that all PA-31-325 and PA-31-350 aircraft with air conditioners be checked for this condition.
Piper Model PA-32-260	Exhaust System	During an annual inspection, a 4-inch crack was found at the cluster in the exhaust system.
Piper Model PA-32RT-300T	Downlock, P/N 38078-02	The nose gear collapsed during landing rollout. An investigation revealed a broken nose gear downlock. All rigging and spring tensions were in accordance with factory specifications. The nose gear strut had required servicing a few days prior to the gear collapsing because of an exceptionally hard landing. The hard landing may have contributed to the failure of the downlock. The purpose of this and the following article is to remind pilots/operators that it is advisable to inspect the aircraft after all hard or unusual landings.
Piper Model PA-34-200T	Mount Assembly, P/N 95724-02	The nose landing gear collapsed during landing. An investigation disclosed the nose gear mount assembly had broken. It was reported that a rough landing had been made in the aircraft 1 day prior to the nose gear collapsing.
Piper Model PA-44-180	Nose Cone Spar Assembly, P/N 86444-02 and -03	There have been three recent reports of finding the nose cone spar assembly cracked. The cracks were at the holes for the nose gear drag brace mounting plate. One aircraft had been repaired by installing doublers and the doublers were later found cracked. The serial numbers indicate the aircraft were 1979 models, and they were used for training. Aircraft times from 1,189 to 1,743 hours. NOTE: It was reported that a heavier spar is in later model aircraft.
Piper (Aerostar) Models 600 and 601	Heater Relay	There have been two recent reports of finding four heater relays severely corroded and rusted. The relay is mounted at fuselage station 266 in an upright position. There are no drain holes and, apparently, condensation is causing the corrosion and rust. The submitter recommends drain holes be made in the relay case to allow condensation to escape or possibly mount the relay upside down.

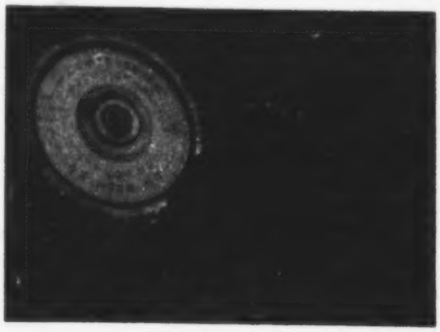
ACCESSORIES

BENDIX

Bendix
Magneto
Model S6RN-205

Washer Installation

The magneto was installed on a factory rebuilt engine and had not been removed or repaired during service. An investigation of rough engine operation on the right magneto revealed the plain washer was installed under the felt washer. This condition allowed unlimited end play between the gear and the distributor block. The gear, not being properly retained, interfered with the block electrodes and generally deteriorated the assembly. Part time since overhaul - 534 hours.



Bendix
Magneto
Model D-2000

Contact Assembly,
P/N 10-382622

Loose and burned contact points caused the engine to run rough in a PA-36 aircraft. Part total time - 195 hours.

BRACKETT

Brackett

Air Filter,
P/Ns BA-7110 and BA-5110

There have been two recent reports of the air filter gasket loosening and going into the carburetor throat. One aircraft engine lost 75 percent power during climb after takeoff. The filter gasket was found in the carburetor throat. The gasket adhesive is apparently deteriorating and releasing the gasket.

MARVEL SCHEBLER

Marvel Schebler
Carburetor
Model HA-6

Float Shaft,
P/N 32-61

The owner of a Gulfstream American AA-5B had occasional problems with fluctuating idle speeds. On one occasion, the engine quit running in the idle position, and there was fuel spillage after engine stoppage. The carburetor was removed and the float lever shaft was found worn over half way through at the ends. The worn shaft was replaced, and engine operation was normal. Part total time - 1,400 hours.

Marvel Schebler
Carburetor
Model MA-4SPA

Pump Plunger,
P/N 194-581

The plating used on the pump stem chips, peels and flakes off into the carburetor, causing the carburetor to fail. It was reported this same condition has been observed in several carburetors.

ENGINES

AIRESEARCH

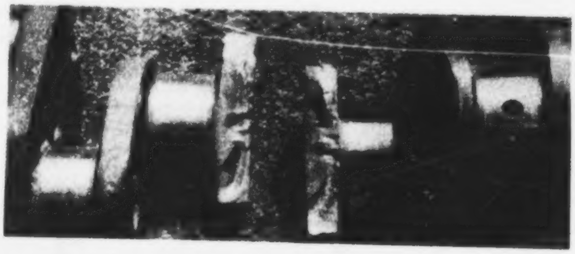
Airesearch
Model TPE-331-6-252B
Dummy Plug

During climb in a Beech 100 aircraft, the pilot noticed smoke and soot coming from the left engine cowl. The engine was shut down and the aircraft returned to the airport. An investigation disclosed a dummy ignitor plug had screwed out of the engine case and hot gasses had burned the covering off of a nearby fuel line. The dummy plug was retrieved from the bottom of the engine cowl, replaced, torqued and safety wired. It is recommended that dummy plugs be torqued and safetied in accordance with Airesearch maintenance manuals.

CONTINENTAL

Continental
Crankshaft,
P/N 639786

The picture is indicative of several reported failures of Continental IO-360 series engine crankshafts. Most of the reported failures were through the aft cheek of the No. 5 rod journal. Engine time at failure ranged from 199 to 861 hours.



Continental
Model TSIO-520
Series
Oil Dipstick,
P/N 633233

"There have been many reports of the oil dipstick falling into the engine. The four metal lock tabs holding the dipstick to the cap corrode away, letting the dipstick and the remaining portion of the tabs fall into the oil sump. The spring tension on the oil cap is also lost, with the possibility of the cap vibrating off. The most recent reports have been on engines with 450 to 960 hours."

NOTE: The above article appeared in Alerts No. 23, June 1980. There have been recent reports of the same condition with times from 200 hours on a remanufactured engine to 900 hours since new. One report advised of a 5 week delay in obtaining a new oil cap assembly.

Continental
Model TSIO-520-M
Oil Line Chafing Channel,
P/N 1213433-6

There have been two recent reports, on low time aircraft, of finding a deep groove in the forward channel of the rear engine mount assembly. The grooves were caused by the oil line to the turbocharger chafing on the channel. It is recommended the oil line be rerouted or clamped to prevent the problem.

WHEN EVEN THE SLIGHTEST DOUBT EXISTS - VERIFY!

PROPELLERS

HARTZELL

Hartzell Model HC-B3TN-5FL	Blade, P/N LT10282HB+4	**Five cracks were found in a propeller blade during inspection of the propeller. The chordwise cracks were near the center of the chord and were between 5-1/4 to 11 inches from the blade tip. The longest crack was approximately 4 inches and was near the 11-inch position. Two of the cracks were visible by eye; the other three by NDT methods. The propeller was on a Rockwell 690A aircraft with Airesearch TPE-331-5-251K engines A similar article, with a picture, appears on page 12 of Alerts No. 12, July 1979.**

MAINTENANCE NOTES

VOLCANIC ASH - MORE INFORMATION

INTRODUCTION - On May 21, 1980, the Federal Aviation Administration issued a special General Aviation Airworthiness Alert entitled Volcanic Ash Hazard. The purpose of that alert was to provide information on the potential airworthiness problems resulting from inflight and ground level exposure to the volcanic ash associated with Mount St. Helens and disseminate it as rapidly as possible. Drawing upon the data and experience gained since the issuance of that advisory, this article expands those areas where a clearer understanding has been obtained.

NATURE OF THE PROBLEM - Although the specific effects of volcanic emission on aircraft systems is not fully understood, owing to a lack of data, volcanism in general and the nature of volcanic emissions have been subjects of intense scientific study for many years. Generally, there are two types of volcanos: those of the Hawaiian type, which are relatively mild, and those which ring the Pacific, which are violently explosive. The latter type, to which Mount St. Helens belongs, erupt with a very high ratio of gas to lava being ejected. The gasses which have been identified may immediately be highly acidic (hydrochloric acid, sulphuric acid, and hydrofluoric acid) or gasses which are converted to acids after several days (sulphur dioxide and other sulphur compounds).

The ash portion of the eruption is, for the Mount St. Helens type of volcano, viscous andesite material which spans a large range of sizes and is highly abrasive. Furthermore, at temperatures characteristic of the primary combustion region of jet and reciprocating engines, such material can melt, forming a glossy coating over exposed parts. Thus, in the initial stage of the recent Mount St. Helens eruptive sequence, the potential existed for a multitude of corrosive and abrasive problems - many of a serious nature.

INFLIGHT ENCOUNTERS - Many factors may influence the specific effects of volcanic ash encounters on individual aircraft. The chemical form of gaseous emissions and the physical nature of particulate matter varies not only from volcano to volcano but also varies between eruptions of a single volcano. For example, satellite photographs of the ash cloud from the Mount St. Helens eruption of May 18 clearly show a change in ash coloration with time, which perhaps reflects the replacement of the initially ejected material from the mountain's surface with the underlying lava and other pyroclastics. (It is expected that any corrosive gas component would be associated with the latter material.)

In addition, gas and particulate composition varies greatly with height. Measurements of airframe acidity on sampling aircraft have shown extremely low pH (high acidity) for encounters above the tropopause but generally moderate to high pH (low acidity) for encounters at lower altitudes. On the other hand, the size and number density of ash particles would be expected to be substantially greater at lower altitudes, causing a more severe abrasive problem. It should be pointed but that the gas and particulate phases should be considered independent. For example, tests for acidity on ash samples collected at ground level do not properly indicate the acidity in the air mass from which it fell (or in which one may have flown).

Compounding these variabilities, it is commonly observed that the atmosphere is not homogeneous and exhibits profound differences over very short distances. It has been shown that on one encounter with the Mount St. Helens cloud, even different engines on the same plane suffered greatly different levels of damage.

Thus, the Federal Aviation Administration has exercised great caution in drawing precise conclusions from the limited scientific data now available. There exist many apparently conflicting reports which could directly affect an assessment of the potential airworthiness problems which may be expected over the long term. It is evident, however, that any inflight encounter with the ash cloud should be avoided and that any suspected encounter necessitates special inspection and maintenance procedures. The General Aviation Airworthiness Alert of May 21, 1980, and pertinent advisories from manufacturers should be used as guidance material in conducting these inspections.

GROUND LEVEL FALLOUT - At present the most severe problem associated with Mount St. Helens is the impact on local aviation facilities in the Washington-Oregon-Idaho area. The bulk of material, its propensity to remain suspended in the air as dust, and its highly abrasive properties have necessitated a variety of special operational procedures at many airports.

Field reports in some instances have indicated that when the bulk ash becomes saturated with water, removal becomes difficult due to its tendency to harden. Some wetting is necessary, however, to avoid resuspending the material by air turbulence.

Thus far, acidity and corrosiveness in the ash fallout on the ground have not presented any special problems. Where the fallout has been greatest, the sulphur compounds have evidently not had sufficient time to undergo conversion to their acidic form, and the other acids have not been entrained in sufficient quantities. Further eruptions may not follow the same pattern, however, and operators should be aware of potential problems.

RECOMMENDED PRACTICES - Generally, the recommendations contained in the General Aviation Airworthiness Alert of May 21, 1980, still apply. In addition, several manufacturers have issued supplementary and, in many cases, more detailed information. The following material expands that given in the FAA Alert in accordance with presently (mid-June) available information.

> As pointed out above, hardening of the ash deposit is mainly associated with that which has been saturated with water. Light moistening may, in fact, aid in ash removal from many surfaces such as runways, although it is not a recommended practice for removal from airframe surfaces because of the potential for associated corrosion problems.
>
> At present, acidity problems have not been encountered from ash fallout but may still be a consideration for inflight encounters, especially at high stratospheric altitudes.
>
> In addition to the more readily accessible Nitrazine paper, other wide range pH indicators may also be used. Specifically, hydrion paper (available from many high school or university laboratories or, in some cases, laboratory supply companies) give a direct and unambiguous test for pH. Scientific analytical consultants may also be employed, if desired.
>
> Additional maintenance reference material has now become available from some manufacturers.
>
> If there is a coating of volcanic ash on a surface, great care should be taken in its removal so as not to increase abrasive action by applying pressure to the ash coated surface, such as walking or dry scrubbing. Initial removal by air or vacuum cleaning is followed by washing in the recommended procedure.
>
> The possibility of increasing the corrosiveness of ground-level ash fallout by wetting does not appear to be a problem at this time. However, the potential for compounded abrasion problem by washing the ash into other systems has been pointed out in several manufacturers' advisories.
>
> For pH testing of aircraft suspected of high altitude airborne ash encounters, the Nitrazine paper must be moistened initially with tap water (pH about 5 to 6) to give a bluish tint. On application to the surface, a rapid change back to light yellow indicator, a pH lower than 4.5 (the lowest readable pH on Nitrazine paper). Lack of color change in blue tinted Nitrazine paper indicates no excess acidity. Further tests may be done with, for example, hydrion paper if the test results are not obviously positive.
>
> Neutralization of surface acids with alkali solvents rather than petroleum based solvents generally is not recommended since the residual salts which are formed may cause other long-term problems.

A MINUTE FOR SAFETY IS BETTER THAN A MONTH FOR REPAIRS.

VOLCANIC ASH - AIRCRAFT PROBLEM

Most aircraft problems have been related to erosion and abrasion caused by the fine volcanic dust. This has caused failure problems within hours of exposure. The onset of this type of problem generally can be detected before failure with sufficient time for a quick landing. Another problem has been seen recently that results in a much more rapid failure.

On Sunday, May 25, 1980, an L-382 aircraft departed McChord Field headed south. Fourteen minutes into the flight the RPM of engine No. 4 increased and then flames burst out in front of the engine. Three minutes later the same thing happened to engine No. 2. The aircraft was at an altitude of approximately 17,000 feet, at that time, and was 40 miles north of Portland. The aircraft then returned to McChord and landed without incident. The follow-up investigation found a ceramic coating over many of the engine surfaces downstream from the firing chamber. This included the thermal monitors. It was suggested that the accumulation of ceramic coating on the thermal monitor resulted in a low engine temperature reading and more fuel was injected into the engine. This continued until the turbine blades were badly deteriorated and the Allison 501-D22 engines finally failed. All four engines were replaced because of volcanic ash contamination.

The center, left and right windshields were also replaced due to damage from volcanic ash.

Below is a disassembly condition report on the No. 4 engine. The other three engines exhibited similar damage.

COMPRESSOR: air inlet housing - cracks at the 3 and 9 o'clock positions; compressor case - eroded blade paths; vanes - erosion and slight FOD on all 14 stages; rotor and blades - all blades, stages 1 through 14, exhibited erosion and slight FOD on trailing edges; labyrinth seals - front compressor seal grooved;

TURBINE: vanes - heavy build-up of melted volcanic ash was noted at first stage vanes when combustion liners were removed. Thirty each first stage vanes also exhibited burned and cracked airfoils. All second, third and fourth stage vanes exhibited burn damage to airfoils; rear turbine bearing support - build-up of material on the blade path area; rotor and blades - all blade tips on all stages burned off; and thermocouples - sampling orifices plugged with glassy material (27 of 36 inlet holes in the thermocouples were partially or completely closed by ingested material).

NOTE: Volcano advisories have been issued by several major airframe and engine manufacturers. These advisories pertain to operation and maintenance of the aircraft and engines relative to exposure to volcanic material.

CAUTION

CAUTION! OWNERS AND MECHANICS

At least one company has been advertising for sale, "...overhauled aviation spark plugs." This company at one time did apply for repair station certification to overhaul spark plugs, but that certification has not been granted. Aircraft owners and maintenance facilities who buy and install unapproved parts are reminded that they must assume the responsibility for determining the airworthiness of such parts.

FUEL ANTI-ICING ADDITIVE

Undiluted Prist was induced into the fuel cell of a Cessna 421 aircraft. When the aircraft was fueled the following day, fuel ran out of the bottom of the wing. The Prist had deteriorated the bottom of the Goodyear fuel cell. Pilots, owners, and operators should be aware and adhere to container instructions which basically state: Start fuel flow before additive and stop additive before stopping fuel flow.

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General Aviation airworthiness ALERTS

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ALERT NO. 27
OCTOBER 1980

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ELIGIBILITY, QUALITY, AND IDENTIFICATION
OF APPROVED AERONAUTICAL REPLACEMENT
PARTS, AC 20-62C REPRINT 14-17

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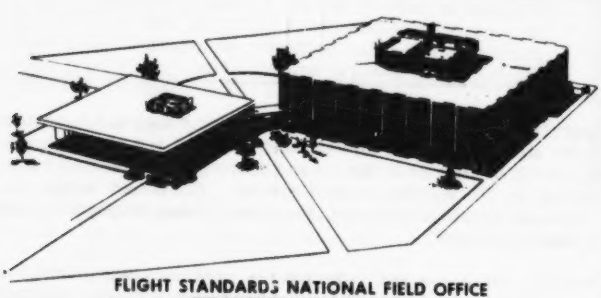
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, D.C. 20590

GENERAL AVIATION AIRWORTHINESS ALERTS

OCTOBER 1980



FLIGHT STANDARDS NATIONAL FIELD OFFICE
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The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported to be significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: Flight Standards National Field Office, Attn: AFO-580, P. O. Box 25082, Oklahoma City, Oklahoma 73125.

AIRCRAFT

AEROSPATIALE

Aerospatiale Model SA 315B	Tail Rotor Drive	An investigation of a recent accident revealed the tail rotor output shaft from the main transmission was turning free, disabling the tail rotor drive, hydraulic pump, transmission oil pump, and the main rotor tachometer. A teardown inspection disclosed the splines were wiped out on the bevel gear flared shaft, P/N 319A62-02-008, and the bevel gear retaining nut, P/N 319A62-01-013, was loose on the threads and only retained by the snap ring, P/N 316-0S62-04-109. During a special inspection of another aircraft, excessive backlash was found in the tail rotor output shaft. Upon disassembly of the main rotor transmission, the bevel gear was found loose in the splined area on the flanged shaft. The splines on the bevel gear were found worn approximately three-fourths of the way through. It is recommended that special emphases be placed in the preflight checklist to check the shaft for excessive backlash.

AERONCA

Aeronca
Model 11AC

Exhaust Stack

This new part had been pressure checked, inspected and tagged. It looked great, but there was no opening at the "Y" connection for the front cylinder pipe. A good example for checking all parts prior to installation.

BEECH

Beech
Models 19, 23, and
24 Series

Aileron Push Rod,
P/N 169-380082-3

Reports continue to be received regarding lack of lubrication of the aileron push rod forward end fitting. Lack of lubrication can result in seizure of the rod end bearing which can then cause binding in the aileron control system. Continued usage can eventually result in failure of the rod end fitting and possible loss of aileron control.

Owners, operators and maintenance personnel are advised to check the aileron push rods for proper function during preflight inspections. Any stiffness or binding should be investigated further. Lubrication of the rod end bearings is recommended at each 100-hour interval.

Beechcraft Class II Service Instruction No. 0858-151 pertains to this problem and includes directions for inspection of the rod end fittings and replacement of defective parts, if required.

Beech
Model 35-33

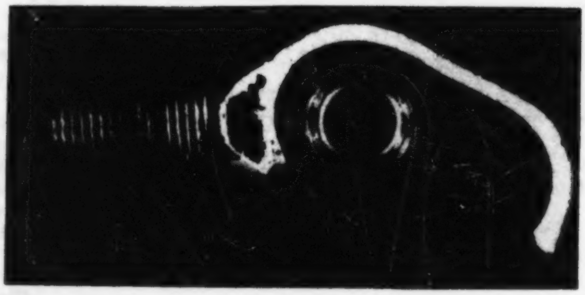
Rod End

A loud noise was heard in the nose gear area during gear retraction. The nose gear extended but collapsed during the landing roll. An investigation revealed the nose gear retract rod end had failed. There was no evidence of nose wheel interference in the well area or any reason found that would cause the failure.

Beech
Model E55

Rod End

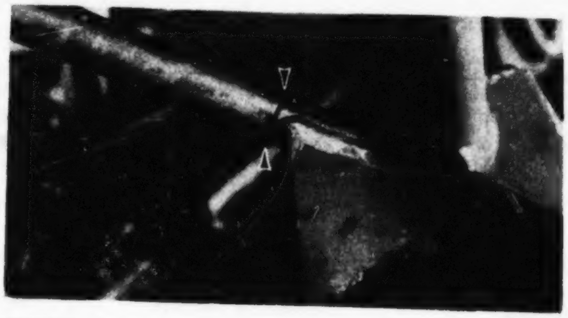
There was a "thump" when the gear was retracted and the red gear unsafe light remained on. The landing gear was extended and the aircraft landed safely. An investigation revealed the rod end on the forward end of the nose gear retract rod had split open. This was the second recent failure of this part experienced by the operator. All rigging was checked in accordance with Beech instructions. Aircraft total time - 1,483 hours.



Beech
Model B95

Engine Mount,
P/N 95-910005

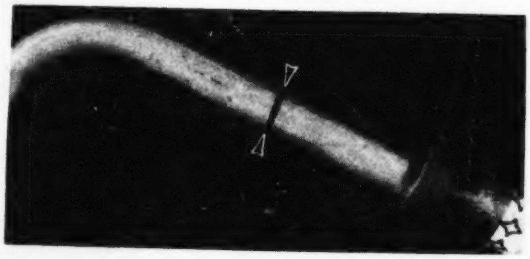
Both engine mounts were found cracked. The cracks were under clamps used to hold hoses and wire bundles. It is recommended this area be given a thorough examination at each annual or 100-hour inspection.



Beech
Model 95-B55

Fuel Line

During a pressure check of the fuel system, a fuel leak was observed just aft of the right engine firewall. An investigation revealed the main fuel line had worn through at the bracket that holds the line in place in the nacelle. Total aircraft time - 2, 238 hours.



BELL

Bell
Model 206

Filter Assembly,
P/N 204-070-538-001

The filter assembly is used in the heater system which is considered as optional equipment on the B-206. It is located under the panel directly above the fuel filler point.

Fuel was leaking down the right side of the aircraft after returning from a normal flight. Removal of the panel above the refueling receptical revealed the heater fuel filter had two (2) pin holes in the bottom of the fuel bowl. Removal of the bowl revealed the inside of the bowl had corroded from moisture.

Since the heater is optional equipment, there are presently no inspection procedures for removal and inspection or cleaning of the filter assembly. The heater fuel system is tied into the normal fuel system; therefore, it is recommended that inspection and cleaning procedures be incorporated into current inspection schedules.

BELLANCA

Bellanca
Model 8KCAB

Stringer Support,
P/N 2-1965-1

During a preflight check, the pilot was unable to obtain any downward elevator movement. An investigation disclosed a stringer support had broken and was jamming the elevator controls. The fuselage structure of another aircraft was inspected and a stringer support was found laying loose in the bottom of the fuselage. The support tabs had broken. Aircraft times were 1, 057 and 2, 096 respectively.

CESSNA

Cessna Model 140	Horizontal Stabilizer Bracket, P/N 0423116	The forward center bracket was found cracked at the right access hole. The cracks progressed through the upper surface of the bracket from the front to the back. This bracket carries the load of the front spar to the tail bulkhead. Approximate aircraft hours - 3, 000.
Cessna Single Engine Aircraft	Turnbuckle Barrels	Small longitudinal cracks have been found in some AN155 brass turnbuckle barrels used in the cable control systems. Exhaustive testing has shown that these cracks do not create an unairworthy condition; however, any turnbuckle barrels found cracked during routine inspections should be replaced. Please submit an FAA Malfunction or Defect Report whenever a cracked turnbuckle barrel is found.
Cessna Single Engine Aircraft	Main Landing Gear Legs (Flat Spring Type)	To preclude fatigue failures of the landing gear legs at the fuselage outboard supports, it is recommended that the portion of the gear leg which comes in contact with the support structure be examined for signs of chafing, rust pits, and corrosion. Any gear leg which is found with signs of rust pits or severe chafing should be replaced. Minor surface corrosion should be removed and the leg primed and refinished in accordance with procedures in the Cessna Service Manual for the aircraft affected.
Cessna Models 150, 172, and 182 Series	Nose Gear Upper Torque Arm	The nose gear upper torque link (arm) is designed with a stop boss intergrally formed into the link. When the strut is fully extended, the boss contacts the strut housing. Reports indicate these stop bosses become peened, resulting in cracks. It is suspected that rough field operation or high operational times contribute to this condition. Cracks have also been detected in the link "I" section. A crack in this area could eventually cause a complete failure and link assembly separation. It is suggested the stop boss area of the upper torque link be inspected for impending failures, using dye penetrant.
Cessna Model 185 PK Float Model 3000	Loose Cables	An accident occurred due to the aircraft swerving in one direction, as in a waterloop, and colliding with an object. It was noted that the water rudder cables were loose or "sloppy," reducing positive control to the water rudders and airplane rudder. The left and right rudder posts and bumpers were split, showing evidence of failure. One water rudder was jammed against the float keel. It is recommended that surveillance be conducted of all cable pulleys in the air-water rudder control systems of twin-float aircraft to ensure their positive operation. Timely maintenance is a necessity for equipment to be in first-class condition.

GENERAL AVIATION ACCIDENTS DURING CALENDAR YEAR 1979 - 4, 229

Cessna
Single-Engine Aircraft

Floatplanes

Floatplanes require the same inspection and maintenance practices as landplanes; however, they also require additional out of the ordinary checks due to the particular environment in which they are operated. For example, when the airplanes are in the water, walk around inspections become an impractical and almost impossible situation. As a result, adjustments must be made to the maintenance program to assure that items normally checked during these inspections are not overlooked. Particular attention should be given to areas which can retain moisture and result in corrosion. Control surface hinges, bellcranks and other control system components are particiularly vulnerable and should be closely monitored.

The picture is of a Cessna A185F horizontal stabilizer/elevator outboard hinge. The hinge has approximately 90 percent of one side corroded away and approximately 50 percent on the opposite side. The bearing was rough, rusted and loose. Aircraft time - 1, 770 hours.

Cessna
Models 188B and
A188B

Wing Spar

Holes in the wing lower surface used to attach the spray booms to the wing spar should be inspected for proper size and tolerance. Cessna recommends this inspection be accomplished within the next 100 hours time-in-service. If any holes are found out of tolerance, a repair doubler should be installed per Service Kit No. SK188-65C.

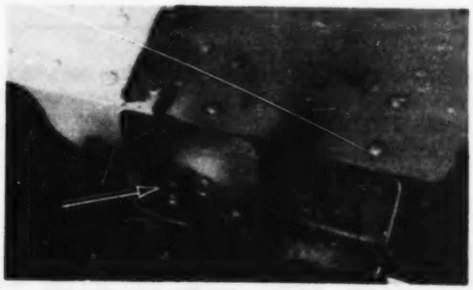
Cessna Service Information Letter No. SE80-18 pertains to this problem. Aircraft affected are 1973 through 1975 models, serial numbers 18801178 through 18802057.

Cessna
Model T210M

Horizontal Stabilizer

During a 100-hour inspection, the mechanic found the horizontal stabilizer spar reinforcement cracked (P/N 1232623-3). Total aircraft time - 1, 774 hours.

There is a similar item on page 3 of Alerts No. 15, October 1979.



Cessna
Model 500

Speed Brake Retract Line,
P/N 5517005-31

A clamp (securing the speed brake line in the trailing edge of the right wing) broke, allowing the line to vibrate and chafe against a lightening hole in a rib. The line was chafed through, and all aircraft hydraulic fluid was lost. The aircraft had operated 79 hours since the area was inspected. Additional clamps on the line may prevent this occurrence.

GATES LEARJET

Gates Learjet Model 25D	Flap Sector, P/N 2625031-2	A mechanic found the bearing, P/N MS21233-5, had come out of the right flap sector assembly where the actuator attaches. The loose bearing had galled the sector arm. Total aircraft time - 1, 196 hours.
Gates Learjet Model 35/36 Series	Engine Oil Tank Access Door Lock	

Gates Learjet Service Bulletin No. SB35/36-52-4, was issued to assure that various access doors located on the airplane would not open in flight. The existing locking mechanism retention screw was replaced with a drilled head screw and secured with Loctite and safety wire. It has been discovered that in some cases, the drilled head screw chafes against the right engine oil tank. If this condition should occur, Gates Learjet recommends reinstalling the original screw and apply Loctite to the threads.

ISRAEL AIRCRAFT

Israel Model 1124	Wing Tip Fuel Tanks	During removal of the strobe light power supply, fuel was found trapped in the trailing edge of the wing tip fuel tank. An investigation revealed the drain hole had been plugged with fiberglass. It is recommended that owners/operators check aircraft for this condition.

MAULE

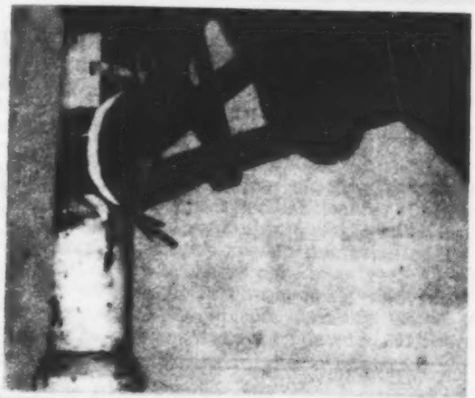
Maule Model M-4-220C	Fuel Cap	The pilot noticed an excessive amount of water from the fuel drain while performing the preflight inspection. An investigation revealed a deteriorated fuel cap seal could, and apparently had, let water enter the fuel tank. It is recommended the fuel cap seals be checked for condition.

MITSUBISHI

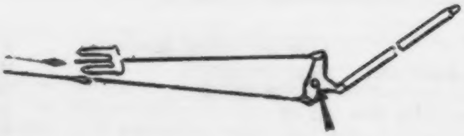
Mitsubishi Model MU-2B-36	Starter/Generator Shaft	The starter/generator shaft was found worn beyond acceptable limits. The starter drive in the engine was also found worn excessively. The probable cause was lack of proper lubrication. Total time on the parts - 1, 127 hours.

FATAL GENERAL AVIATION ACCIDENTS DURING CALENDAR YEAR 1979 - 622; WITH 1, 322 FATALITIES

PIPER

Piper Model PA-22-160	Mount Assembly Nose Wheel, P/N 13034-00	The mount assembly was found split during a preflight inspection. No hard or rough landings had been reported. Total aircraft time - 3,905 hours. 
Piper Model PA-23-250	Fuel Cell U.S. Rubber, P/N 454321	"During installation the fuel cell ripped along one side. Although the cell appeared to be in good condition, close examination revealed the fabric was rotted and could be easily torn. The fuel cell had zero time since reconditioning by Aviation Materials, Memphis, Tennessee." NOTE: The above article appeared in Alert No. 24, July 1980. Further inspection of the fuel cell failed to reveal any rotted or deteriorated fabric. The nylon fabric cell was repaired, installed in an aircraft and there have been no further problems. The fuel cell may have been chemically or mechanically damaged.
Piper Model PA-23-250	Fuel Line, P/N 31918-00	The electric fuel pump-to-firewall fuel line was found chafed nearly through the tubing wall. Piper Service Bulletin No. 663 requires inspection of this line for chafing against the electrical harness. The line had been inspected in accordance with the service bulletin within the previous 100 hours. Aircraft time - 2,774 hours.
Piper Model PA-23-250	Stabilizer Trim Tab Hinge, P/N 16914-00	The stabilator left outboard trim tab hinge was found badly worn. This wear had progressed to the point that the hinge loops were cracked. The remaining two hinges showed no signs of wear. There was no apparent reason for this defect. Aircraft time - 940 hours.
Piper Model PA-28RT-201	Link and Brace Assembly Gear Downlock, P/N 76426-03	The pilot was unable to get a nose gear down and locked indication. The aircraft was landed without incident. During an investigation, the downlock link was found cracked on the right top side where the downlock attaches. A broken downlock switch actuator was the cause for not getting a gear down and locked indication.

FATAL GENERAL AVIATION ACCIDENTS DURING FIRST 6 MONTHS OF 1980 - 310; WITH 617 FATALITIES

Piper Model PA-30	Fuel Pump, P/N 41234	An operator has replaced five A C engine-driven fuel pumps on the left engine because of fuel leakage at the lower parting surface of the pump. Fuel pump average time - 8 hours.
Piper Model PA-31-350	Corroded Circuit Breaker, P/N 454-656	The internal contacts of the circuit breaker had light corrosion, causing approximately 60 ohms of resistance. This circuit breaker controls the bus bar voltage to the right voltage regulator. Since the bus voltage to the regulator is reduced by this resistance, the field voltage to the alternator is increased, resulting in the alternator putting out approximately 29.5 volts into the A/C bus bar. If the regulator is set in accordance with Piper service manual, this problem would not be apparent, and as a result, both regulators would be in parallel at a voltage somewhat higher than 28.5 volts. There have been several reports of water entry and moisture causing electrical problems on PA-31 aircraft.
Piper Model PA-32R-301T	Nose Gear Switch Bracket, P/N 38039-02	During nose gear extension, the nose gear downlock would travel too far down the gear light switch actuator, causing the actuator arm to slip out of proper location. The arm was then above the downlock, and when the gear was retracted, the downlock would strike the actuator arm and pull it away from the switch. In this condition, there was no switch contact when the nose gear was extended. The nose gear switch bracket was found three-sixteenths of an inch too high. The switch bracket was lowered to the proper position and gear operation was normal. Aircraft total time - 25 hours.
Piper Model PA-34-200	Combustion Heater Fuel Line	An Alaskan pilot complained of no auxiliary heat during an extended flight. An inspection revealed the aluminum fuel line to the Janitrol heater was severely corroded, and fuel was spilling out of the line onto the aircraft floor. The severely corroded area was to the right and aft of the right rear seat at station 165. Salt corrosion was reported as the cause of the corroded fuel line. Total aircraft time - 1,794 hours.
Piper Model PA-38-112	Rudder Control Cable, P/N 77836-06/18	The rudder control cable was found rubbing on the airframe stringer. The stringer is located on the right side beneath the cockpit control console where cable pulleys are attached to the fuselage structure. Aircraft time - 490 hours.
Piper Model PA-44-180	Bellcrank Assembly, P/N 35804-02	
The stabilator bellcrank bearing attach fitting was found separating where it is riveted in the assembly. Total aircraft time - 274 hours.		
Piper Model PA-44-180	Fuel Vent Hoses, P/Ns 63913-190 and -160	The vent hoses were found deteriorated and broken after 64 hours of operation. The fuel may be affecting the hoses as they were soft and gummy when removed.

ROCKWELL INTERNATIONAL

Rockwell Model 112TC	Oil Pressure Gauge	During maintenance on the aircraft, oil was noticed on the forward carpet. When the mechanic wiggled the oil pressure gauge, the soldered nipple broke loose. Aircraft time - 141 hours.
Rockwell Model 500B	Circuit Breakers	During a test flight for trouble shooting radios, a circuit breaker was pulled to check a noise source. Upon resetting the circuit breakers, all radios blew and the bulbs exploded in all lamps that were on. An investigation revealed the left and right overload circuit breakers were miswired. The internal resistor was wired to the relay case for ground rather than to electrical ground as the circuit diagrams show. Aircraft manufactured in 1962 and had accumulated 5, 891 hours.

SWEARINGEN

Swearingen Model SA226-TC	Bolt, P/N AN3-6	The bolts attaching the rudder pedal link to the forward end of the rudder cables have been found worn on several different aircraft. Aircraft times - 5, 000 to 16, 000 hours. Swearingen has issued a Service Bulletin to all operators reference the problem.

UNIVAIR

Univair (Globe) Model GC-1B	Corrosion	Two reports received concern severe corrosion found in the horizontal stabilizer and vertical fin. In both cases, ribs, spars, stringers, and channels were affected. A previous report published in Alert No. 13, dated August 1979, reported corrosion in the wing structure. Owners are urged to visually inspect their aircraft for telltale signs such as loose rivets and stains around rivets, bolts, fairings, etc. Also, an in-depth inspection of the aircraft's internal structure should be made by qualified maintenance technicians to assure that the structural integrity of the aircraft has not deteriorated.
Univair (Ercoupe) Model 415	Muffler	An inflight failure of the muffler assembly caused heat damage to the hydraulic reservoir and cabin carpeting. The muffler was a replacement unit made of heavier material than the original. Total time on the unit was 120 hours since new. It is recommended that attention be paid to the exhaust system, particularly the area where the muffler attaches to the exhaust pipes for signs of impending failure.
Univair (Ercoupe) Model 415	Rudder Horn	A report was received of a cracked rudder horn. During an inspection, the mechanic applied slight pressure to the right rudder horn which completely failed. Inspection revealed it had been cracked two-thirds of the way through for some time. Fatigue is suspected as the cause of failure.

ACCESSORIES

BENDIX

Bendix Magneto Models S6RN-1201 and S6RN-1225	**Case**	**Reports continue to be received of magneto cases cracked beyond limits. The picture represents four S6RN-1201 magnetos removed with 213 hours total time. Four reports and pictures of S6RN-1225 magnetos were received with similar case cracks at 267 hours total time.**

PRESTOLITE

Prestolite Battery Rebat S-25M	**Cell Cover**	**The aircraft radio burned when the switch was placed on after installing a new aircraft battery. An investigation revealed the cell cover was marked incorrectly. The positive post was labeled "negative" and the negative post "positive." The battery was installed as per the markings by each post on the cell cover. This was the second recent report on this model battery in this condition.**

SKYTRONICS

Skytronics	**Spark Plug Leads**	**There have been three recent reports of the lead shield separating at the solder joint to the heat sink. The leads were installed on Continental TSIO-360 and Lycoming IO-720 engines. Part times were from 100 to 200 hours.**

WESTINGHOUSE

Westinghouse Generator/Alternator Model 903J816-5	**Brush, P/N 916B775-1**	**During an investigation to determine the cause for excessive brush wear, six of 12 brushes in the two aircraft alternators had open pigtails due to improper crimp. Both alternators on the F27-F aircraft were low time since previous brush repair. A check of brushes in stock revealed the same defect in several brushes - improper crimp.**

EVERYTHING NEW IS NOT ALWAYS TRUE

EQUIPMENT

AIR CRUISER

Air Cruisers
Model AC-2 Life
Vest

Water-Activated Emergency
Light System

An air carrier had received 250 new Air Cruiser Model AC-2 life vests for use in a B-727 aircraft. During a flight attendant training session, the person attempted to activate the emergency light on one of these new vests. The system failed to function, due to factory-installed tape securing the plugs in the water entry vents, and thereby rendering the emergency light system inoperative. We advise all users of Air Cruiser life vests, either new or overhauled by Air Cruiser, to check for this condition and make proper corrections. Time on appliance - 0 hours.

ENGINES

CONTINENTAL

Continental
Model IO-520

Cylinder

The cylinder head was partially separated from the barrel. This was a chromed cylinder with 45 hours since overhaul.

Continental
Model R975

Crankshaft Failures

In recent months there have been reports of crankshafts cracking and supercharger bearing problems in the R975 Continental engines installed on the Grumman G164 aircraft.

An investigation revealed the crankshaft in the R975 Continental engine is one-sixteenth inch longer than the crankshaft installed in the R985 Pratt and Whitney.

When the 2D30 propeller hub and rear cone, P/N AN50008-3, is used on the R975 Continental engine, the cone must be shimmed .040, or the propeller cannot be properly torqued. Without being shimmed, the propeller nut bottoms out. A P&W oil slinger, P/N 1020, with the bevel machined off, has been used for the shim. At this time, several aircraft in one area have been modified. An exact accumulated time has not been established; however, there have been no reported failures recently.

MAINTENANCE NOTES

AIRCRAFT PREHEAT

"During winter preheat, the plastic rubber coating on the mixture and carburetor heat cables melted, causing the cable to seize. Normal heat was applied.

This report is typical of several received each winter season relating to preheat of aircraft and engines. Advisory Circular 91-13C, Cold Weather Operation of Aircraft, provides background and guidelines relating to operation of aircraft in the colder climates. The following recommendations regarding aircraft preheat are from AC 91-13C:

"(i) preheat the aircraft by storing in a heated hangar, if possible;
"(ii) use only heaters that are in good condition and do not refuel the heater while it is operating;
"(iii) during the heating process, do not leave the aircraft unattended and keep a fire extinguisher handy;
"(iv) do not place heat ducting so it will blow hot air directly on combustible parts of the aircraft; such as, upholstery, canvas engine covers, or flexible fuel, oil, and hydraulic lines;
"(v) when using a "fire pot" (salamander) for heating, it is suggested that wire mesh be inserted in the ducting between the pot and the engine to stop flaming pieces of carbon from entering the aircraft or engine compartment."

NOTE: It is not advisable to use automobile exhaust for preheat. The contaminates in the automobile exhaust can be damaging to fuel and oil hoses, coverings on controls, and corrosive to metals.

UNAPPROVED REPLACEMENT PARTS

The purpose of this article is to provide additional safety information regarding the use of certain available replacement wing lift strut forks on various Piper aircraft in compliance with a recent emergency airworthiness directive. This article will identify the only known sources of FAA approved replacement lift strut forks.

Airworthiness directives dating back to 1957 have been issued which require mandatory periodic inspection and replacement (of the wing lift strut forks) after a period of service time. The latest AD (Emergency AD dated April 25, 1980), requires removal from service of machine threaded forks and establishes a repetitive interval for the inspection of the fork by a dye penetrant method.

With the exception of Piper manufactured replacement parts, the FAA has approved only one source of forks which are equivalent to Piper P/Ns 13770 and 14481, and that source is the Univair Aircraft Corporation in Aurora, Colorado. The Univair forks are identified as being FAA-PMA on the packaging for the part.

Maintenance personnel should, in complying with the AD, verify that the fork has been procured from one of the two approved sources. Any other source is not FAA approved, and parts from these other sources should not be used in standard certificated aircraft.

FAR 21.303 states that no person may produce a replacement part for installation on a type certificated product unless the part was produced in accordance with a Parts Manufacturer Approval (PMA). It is common knowledge that there are a multitude of replacement parts available which are directly interchangeable with the original manufacturer's parts, and these have no FAA approval basis. For the most part, the parts are supposedly made for use in homebuilt aircraft projects.

All owners/operators of standard category aircraft should, once again, be cautioned against the use of unapproved replacement parts and the potentially serious adverse effect on the continued airworthiness of the aircraft created by the use of these parts.

Insofar as the subject of Piper wing lift strut forks is concerned, the only two approved sources of these parts are the original equipment manufacturer (Piper) and the Univair Aircraft Corporation. All other parts which are available on the open market are not considered FAA-approved and therefore should not be used in standard category aircraft.

FATAL GENERAL AVIATION ACCIDENTS DURING THE MONTH OF JUNE 1980 - 81; WITH 147 FATALITIES

MAINTENANCE NOTES (Con.)

BOGUS PARTS

Bogus parts have been discovered coming from the Colorado to the Illinois area. The parts are fork bolts being offered as Piper P/N 14481-00. An advertisement is being offered in a publication for these parts with no reference to PMA or airworthiness directives.

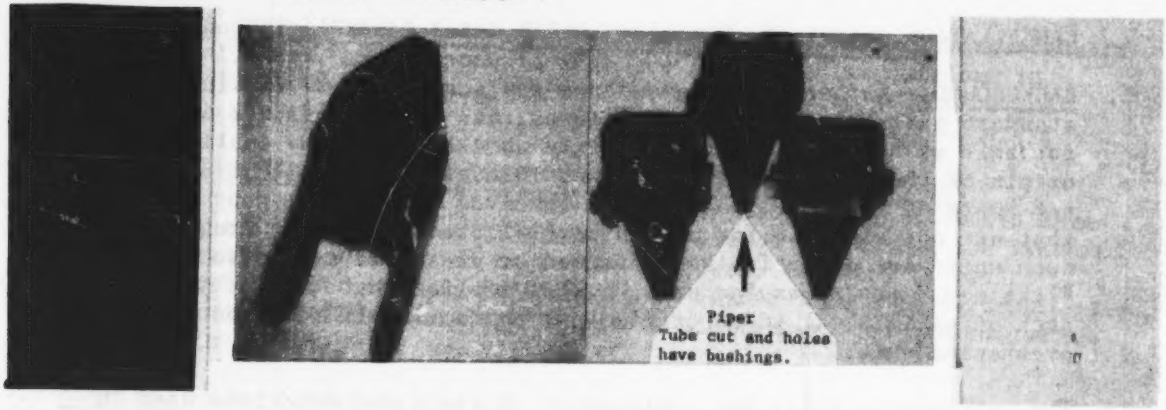
An inspection of the parts indicates poor quality. The thread valleys are very wide, the thread height shallow with an extremely sharp apex. The fork end has heavy machine marks and appears unfinished. The relief cuts on either side of the fork cut have standing burrs one-sixteenth to one-eighth inch. There is a magnaflux stamp on the flat of the fork. The metal has a clear, high tone ring which is long lasting.

Bogus fork bolts may be available in other areas. Owners/mechanics should be cautious when purchasing bolts to comply with the airworthiness directive.

MORE BOGUS PARTS

Bogus Piper J-3 landing gear and lift strut fittings, P/N 20401-01, and wing lift strut fittings, P/N 21421-00, were found in the Eastern United States. The parts had been purchased in Wisconsin as new.

All owners and operators are advised to be on the alert, when replacing these critical fittings, against the possibility of installing an improper and perhaps unairworthy part.



NOTE: The bogus parts industry depends on getting their merchandise by the mechanics. Aircraft owners and mechanics should be suspect of bargain deals and alert to the possibility of purchasing bogus parts.

CAUTION

FUEL TANK CHECK

There have been reports of fuel thieves operating again. The targets are light aircraft and the problem appears to be in all parts of the United States. So far, there have been no reports of fuel theft causing accidents but the possibility exists. A visual check of all fuel tanks prior to takeoff is doubly important as long as fuel thieves are on the loose.

APPROXIMATE GENERAL AVIATION FLIGHT HOURS DURING CALENDAR YEAR 1979 - 41,060,000

AC NO: 20-62C
DATE: 8/26/76

ADVISORY CIRCULAR

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

SUBJECT: ELIGIBILITY, QUALITY, AND IDENTIFICATION OF APPROVED AERONAUTICAL REPLACEMENT PARTS

---

1. PURPOSE. This circular provides information relative to the determination of the eligibility of aeronautical parts and materials for installation on certificated aircraft.

2. CANCELLATION. Advisory Circular 20-62B dated 9/13/74, is cancelled.

3. BACKGROUND. An increasing amount of replacement parts (including standard parts), materials, appliances, and instruments are offered for sale as being of aircraft quality when actually the quality and origin of these units are not known. Users of such units are usually not aware of the potential hazards involved with replacement parts that are not eligible for use on certificated aircraft. Frequently such units are deceptively advertised or presented as "unused," "like new," or "remanufactured." This implies that the quality of such units is equal to an original or appropriately repaired or overhauled unit.

   The performance rules for replacement of parts and materials used in the maintenance and alteration of U.S. certificated aircraft are specified in Federal Aviation Regulations (FAR) 43.13 and FAR 145.57. The responsibility for the continued airworthiness of the aircraft, which includes the replacement of parts, is the responsibility of the owner/operator as outlined in FAR 91.163, FAR 121.363, FAR 123.45, FAR 127.131 and FAR 135.143(a).

4. IDENTIFICATION OF APPROVED PARTS. Approved serviceable replacement parts are identified as follows:

   a. By an FAA Form 8130-3 (Formerly FAA Form 186), Airworthiness Approval Tag. An Airworthiness Approval Tag identifies a part or group of parts that have been approved by authorized FAA representatives.

b. By an FAA Technical Standard Order (TSO) number and identification mark that indicates the part or appliance has been manufactured under the requirements of FAR 37.

c. By an FAA/PMA symbol, together with the manufacturer's name, trademark or symbol, part number, and the make and model of the type certificated product on which the part is eligible for installation, stamped on the part. An FAA Parts Manufacturer Approval (FAA/PMA) is issued under FAR 21.305. The make and model information may be on a tag attached to the part.

d. By shipping ticket, invoice, or other document which provides evidence that the part was produced by a manufacturer holding an FAA Approved Production Inspection System issued under FAR 21, Subpart F, or by a manufacturer holding an FAA Production Certificate issued under FAR 21, Subpart G.

e. By a certificate of airworthiness for export issued by a foreign government under the provisions of FAR 21, Subpart N.

5. IDENTIFIED UNSERVICEABLE PARTS, APPLIANCES, AND COMPONENTS. Unserviceable parts, appliances, and components that are identified as outlined in paragraph 4, should be tested, examined, or operated to determine that the articles used meet the requirements of FAR 43.13.

6. UNIDENTIFIED SERVICEABLE OR UNSERVICEABLE PARTS, APPLIANCES AND COMPONENTS. A serviceable or unserviceable unidentified part would have to be reidentified by the manufacturer or a person possessing the required data to certify that the part meets the standards to which it was manufactured as contained in FAR 21.305. A common source of unidentifiable serviceable or unserviceable parts, appliances, and components is outlined in paragraph 7.

7. SURPLUS. Many materials, parts, appliances, and components that have been released as surplus by the military service or by manufacturers may originate from obsolete or overstocked items. Parts obtained from surplus sources may be used, provided it is established that they meet the standards to which they were manufactured, interchangeability with the original part can be established, and they are in compliance with all applicable airworthiness directives. Such items, although advertised as "remanufactured," "high quality," "like new," "unused," or "looks good," should be carefully evaluated before they are purchased. The storage time, storage conditions, or shelf life of surplus parts and materials are not usually known. Example of items that may be available from surplus sources are:

a. Antifriction bearings. Antifriction bearings that have been in storage for a long period, even though encased in protective coating or within a component, are subject to deteriorating effects of time and the elements. Such items should be completely inspected and lubricated before placing them in service.

b. Aircraft fabric. Fabric and prefabricated covers should be used only if identifiable as meeting aircraft standards. All fabric should be examined for freedom from deterioration due to age, climatic conditions, and contamination.

c. Dope and paint. Dope and paint advertised as aircraft quality may have deteriorated due to age or climatic conditions while in storage and should be tested before use.

d. Avionic parts. Small avionic replacement parts, (e.g., resistors, capacitors, diodes, transistors, etc.), should be the same as or equivalent to the parts identified in the manufacturer's manual and should be tested for performance.

e. Aircraft instruments. Although advertised as "high quality," "unused," "like new," "looks good," or "remanufactured," aircraft instruments should not be put in service unless they have been inspected, tested and overhauled as necessary by an appropriately rated, certificated instrument repair station. Instruments are highly susceptible to hidden damage caused by rough handling and improper storage conditions.

f. Pumps, valves, and actuators. The internal seals are subject to deterioration from long-term storage and are susceptible to early failure in service.

g. Connectors and fittings. The cones, facings and threads have been found damaged due to mishandling. Generally there is no accurate visual means of identifying the specification revision status of a connector or fitting except by assistance from the original manufacturer. Stocking practices should consider specification revision status.

8. ELECTRICAL AND ELECTRONIC KITS. Several kits which are being offered for sale to be assembled by the purchaser and intended to be installed on a standard certificated aircraft may not be eligible for installation. During and after assembly, these kits should receive conformity inspections by properly certificated or authorized persons to assure they meet all applicable airworthiness requirements for use on aircraft. The installation of these approved units should be accomplished under the supervision of a properly certificated airman or agency. When the installation is a major alteration, proper forms should be completed, and a properly certificated person should make the required entries to approve the aircraft airworthy for return to service.

9. UNACCEPTABLE PARTS, APPLIANCES AND COMPONENTS. A common source of unacceptable parts, appliances, and components is outlined in paragraph 10.

10. SALVAGE. Salvaged parts, appliances, or components which have come from aircraft that have been involved in accidents, and rejected parts sold by the manufacturer as scrap metal, are available to industry as replacements. Such items may have been subjected to forces or environments which would render them permanently unairworthy. For example:

a. Parts that have been exposed to heat or fire can be seriously affected and are likely to be unserviceable.

b. Foreign or corrosive liquids can also take their toll of aircraft parts. Parts, appliances, and components from aircraft that have been submerged in salt water have been offered for sale as serviceable replacement parts.

11. KNOW YOUR SUPPLIER. It has come to our attention that many reproduced parts and components, particularly instruments which have been manufactured by persons other than the original manufacturer, are available for purchase and installation on U.S. certificated aircraft. Often, an original part is used as a sample to produce duplicates. The reproduced parts appear to be as good as the original part; however, there are many unknown factors to be considered that may not be readily apparent to the purchaser; i.e., heat treating, plating, inspections, tests and calibrations. All too often the faulty part is not discovered until a malfunction or an accident occurs.

In addition to reproduced parts, used or repaired parts are offered for sale as "like new," "near new" and "remanufactured." When such terms are employed, or whenever a part is not identified as an approved part, the purchaser should have inspections or tests accomplished to determine that the part is airworthy for use on an aircraft in accordance with applicable airworthiness requirements for that aircraft.

12. SUMMARY. In accordance with Federal Aviation Regulations, certification of materials, parts, and appliances for return to service, for use on aircraft, is the responsibility of the person or agency who signs the approval. The owner/operator, as denoted in paragraph 3 of this advisory circular, is responsible for the continued airworthiness of the aircraft. To assure continued safety in aircraft operation, it is essential that great care be used when inspecting, testing, and determining the acceptability of all parts and materials. Particular caution should be exercised when the identity of materials, parts, and appliances cannot be established or when their origin is in doubt.

J. A. Ferrarese

J. A. FERRARESE, Acting Director
Flight Standards Service

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AC No. 43-16

General Aviation airworthiness ALERTS

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ALERT NO. 28
NOVEMBER 1980

U.S. DEPARTMENT OF TRANSPORTATION
Federal Aviation Administration
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TD4.414:

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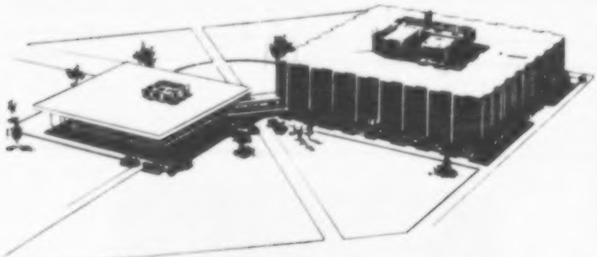
ADVISORY CIRCULAR
AC 43-16

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, D.C. 20590

GENERAL AVIATION AIRWORTHINESS ALERTS

NOVEMBER 1980



FLIGHT STANDARDS NATIONAL FIELD OFFICE
MIKE MONRONEY AERONAUTICAL CENTER

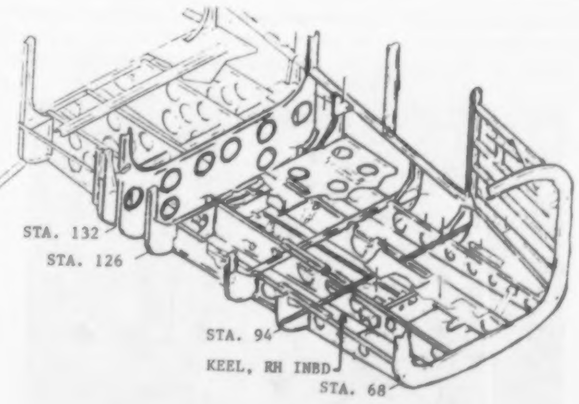
The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported to be significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: Flight Standards National Field Office, Attn: AFO-580, P. O. Box 25082, Oklahoma City, Oklahoma 73125.

AIRCRAFT

BEECH

Beech Model B19	Right Inboard Keel, P/N 169-400005-471

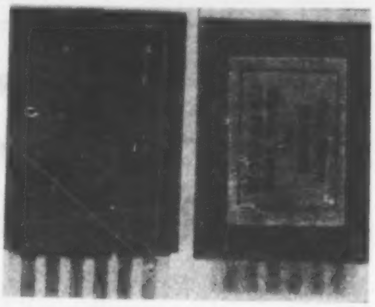
The right keel beam assembly below the rudder pedal support has been found cracked on several airplanes in a fleet used by a single operator for flight training. All airplanes involved had been used for training since new, and had accumulated between 4,200 and 5,200 hours time-in-service.



Beech
Model 200

Power Supply,
P/N PW-FLC-28

While in cruise flight, with the cabin lights on, one florescent light power supply started to burn and caused some smoke in the cabin. The power supply was bulged and had ruptured. Location was in the cabin overhead panel. Total time on the power supply - 550 hours.



Beech
Model 200

Storm Windows,
P/N 50-420083

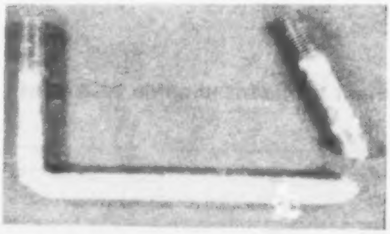
There have been two recent reports of finding the crew compartment storm windows cracked around the hinge attach holes. The majority of the attach holes had fine stress cracks, possibly caused by over-torque of the hinge screws.

BELLANCA

Bellanca
Model 8GCBC

Landing Gear "U" Bolt

The bolt broke at the aft side of the gear leg. The bolt had evidence of a previous crack. Total aircraft time - 1,023 hours.



BALLOON WORKS

Balloon Works,
Model Firefly 8-24

Loose Stitching

The stitching was found loose and unraveling during an annual inspection. There were approximately 40 different places where the stitching was loose from 1 to 3 inches in length. One repair station has repaired several Balloon Works balloons with this problem. This balloon was certificated in 1979 and had 15 hours of logged flight time.

CESSNA

Cessna
Model 172A
(Australian Registry)

Propeller Spinner,
P/N 0550162-7

There was engine vibration during flight prior to hearing a "bang." Engine vibration ceased after the "bang." The spinner had disintegrated. Approximately 10 percent of the spinner remained attached to the back plate. Spinner total time - 3, 796 hours and it had been refitted to this aircraft 5 hours previous.

Cessna
Model 177RG

Propeller Spinner,
P/N 0752637-16

This spinner came apart during flight as if it had been "blasted." This was the third damaged spinner on this aircraft. Two previous spinners were found cracked. Total time on the spinner - 274 hours.

Cessna
Model TU206

High Voltage Spiking

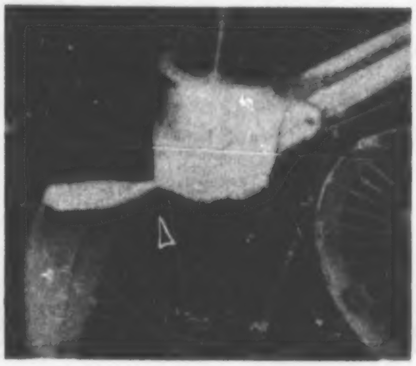
There have been several reports of electronic components damaged by high voltage spiking on C-206, C-207, and C-210 aircraft. The report on this C-206 stated the ground strap (installed per Airworthiness Directive 79-25-07) became unattached during flight, causing high voltage spiking of the electronic system. Both 28V/14V converters were damaged. The ground strap was reinstalled with a lockwasher and Loctite. Loss of continuity between the alternator and the engine or between the engine and engine mount may be part of the spiking problem.

Cessna Single Engine Customer Care Service Information Letters SE79-5, dated February 26, 1979, and SE79-58 and SE79-59, dated November 23, 1979, pertain to the subject matter of the AD.

Cessna
Model 210M

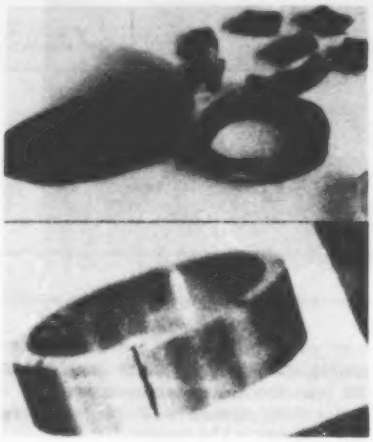
Nose Gear Fork

The left side of the nose gear fork broke during a landing. The break was at the top of the curve, and there were no indications of a prior existing crack. Aircraft total time - 356 hours.



Cessna
Models 300/400
Series (except 402C,
404, 414A, 421C
and 441)

Main Gear Strut Inner
Bearing, P/N 5041108



During preflight inspection, it was noted that the left main strut appeared to be over-inflated. Teardown of the strut disclosed that the inner bearing was broken into seven pieces. Breaks occurred vertically to the oil holes. The right gear bearing was found cracked through at one oil hole.

One recent report stated the failed bearing allowed full extension of the strut, jamming the gear in the wheel well.

Cessna
Model 310R

Cabin Heating System

During an inspection, the fuel inlet line B-nut was found loose. The shroud allowed the fuel to leak out and flow over the heater, across the electrical terminal board, and into the belly of the aircraft. The fuel would exit out the heater exhaust hole.

Cessna
Model 401B

Pitot Line

The pilot's and copilot's airspeed indicators became inoperative because of melted pitot lines. New pitot lines were installed and routed through the bulkhead away from heater output ducts and heater outlets. Total aircraft time - 1,128 hours.

Cessna
Model 414A

Throttle Linkage

The left engine throttle would not retard the engine below 2,000 RPM. An investigation disclosed the bolt in the throttle linkage was caught below the oil line that is between the oil cooler and the wastegate actuator. The same condition was possible on the right engine. The submitter recommends a clamp be installed on the oil line to prevent interference with throttle movement. Total aircraft time - 11 hours.

Cessna
Model 441

Landing Gear
Hydraulic Line

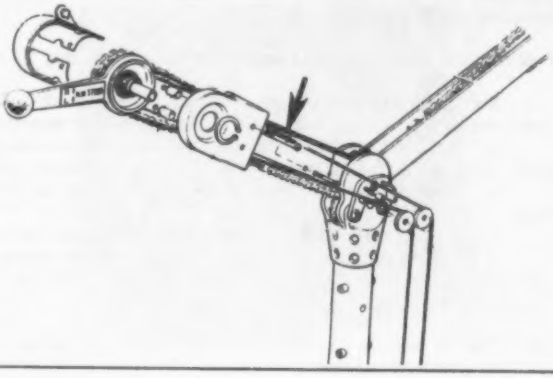
The flexible gear up line was found chafing on the gear down line, P/N 5727002-42, in the right wheel well. The down line required replacement. It is suggested that the area be inspected for similar conditions.

APPROXIMATE NUMBER OF REGISTERED CESSNA 172 AIRCRAFT - 25,335 (AUGUST 1980)

DeHAVILLAND

DeHavilland
Model DHC-6-300

Nose Steering Cable,
P/N C6CF1242-3



Two strands of the nose gear steering control cable were found broken during a 100-hour inspection. The broken strands were approximately 1 inch from the control lever. Further inspection of the cable after removal disclosed broken strands at other cable locations. Aircraft time - 2,290 hours.

There was another report of a DHC-6 aircraft making an emergency landing with the nose wheel cocked to the left. The cause for this nose wheel problem was failure of the steering cable. An inspection of the cable for condition is recommended.

EMBRAER

Embraer
Model EMB-110P1

Fuel Filler Neck

There have been reports of the epoxy seal on the fuel tank filler neck eroding. This condition allows water to enter the fuel tanks. It is recommended that aircraft be inspected for this condition.

Embraer
Model EMB-110P1

Starter/Generator Shaft

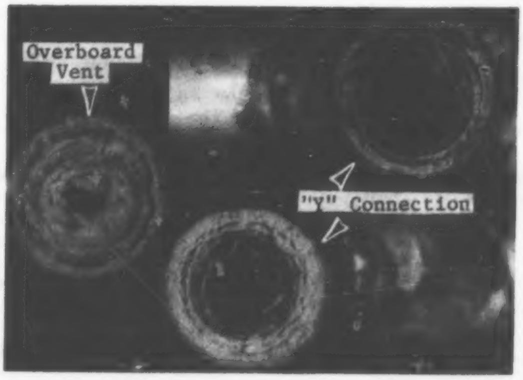
There have been recent reports of the starter/generator drive shaft shearing while starting the PT6A-34 engines. A probable cause may be starting the second engine with the battery and generator and the generator taking the major electrical load. Two recent reports listed shaft times of 44 and 310 hours. Starting the engines with external power or a fully charged battery should help prevent this problem.

GATES LEARJET

Learjet
Models 24B, 24E,
and 35A

Battery Vent System

Reports have been received of finding the battery vent system severely restricted with a build-up of corrosion. The vent tube assemblies were restricted to approximately a No. 10 drill size hole through the center. The models 24B and 24E had lead acid batteries installed per STC SA 871SO or SA 1033SO. The vent tubes were found restricted on one aircraft 423 hours after the lead acid battery installation. Cause and corrosion content unknown at time of the reports. It is recommended that Learjet owners/operators inspect aircraft for this condition.



Gates Learjet **Excerpts from Airworthiness Directive 80-19-09, Amendment 39-3913**

"To reduce the possibility of fuel contamination and/or the presence of ignition sources in the tailcone service area, accomplish the following:

"A) Within the next 25 hours time-in-service after May 8, 1980:

1. Run each engine to takeoff thrust momentarily, shut down and immediately open the access cover under the tailcone service area and make the following visual inspections:
   a. inspect the fuel and hydraulic system components for deterioration or damage, leakage and stains indicating leakage, paying particular attention to the exterior of the P/N AV16E1182 motive flow shutoff valves;
   b. inspect the batteries and electrical equipment for deterioration or damage and conditions which may cause arcing;
   c. inspect all vents and drains for obstruction or blockage; and
   d. before further flight, correct any of the above-noted unsatisfactory conditions. DO NOT DISASSEMBLE OR REASSEMBLE MOTIVE FLOW SHUTOFF VALVES IN THE FIELD. Replace leaking valves with a new or factory rebuilt part."

NOTE: This is not the complete airworthiness directive. This excerpt is to give emphasis to one area - the motive flow shutoff valves.

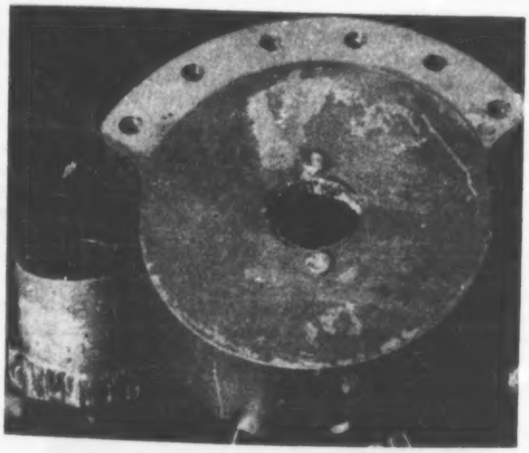
GULFSTREAM AMERICAN

Gulfstream American Model G-73 Elevator Tube, P/N 109410-2

The pilot experienced a loss of elevator control during takeoff. The aircraft was returned safely to the water without further incident.

An investigation disclosed the center section had separated from the fitting in the sector assembly which is located on the inboard end of the elevator control tube assembly. The center of the fitting is the support around which the control tube rotates. The loss of this support diminished the control continuity through the elevator control tube.

The surfaces of the separation were dirty and peened, indicating that the outer portion of the fitting was rubbing against the center section and that the condition had existed for a considerable period of time. No evidence of corrosion was found. It is recommended that the unit be removed periodically for inspection.



ISRAEL AIRCRAFT

Israel Model 1124 Hydraulic Lines

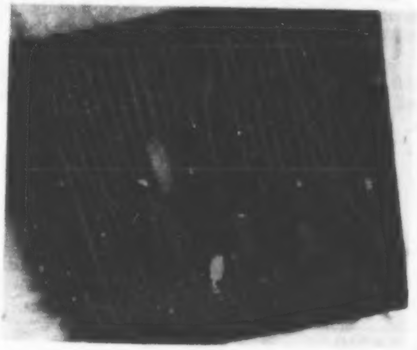
The hydraulic lines from the wing root to the landing gear, lift dumpers, and speed brakes were found severely chafed. The inboard flap actuator causes movement of the lines each time the flaps are actuated. Chafed hydraulic lines required replacement on one aircraft at 500 hours and on another aircraft at 200 hours total time.

It is recommended that owners/operators inspect aircraft for similar conditions.

MAULE

Maule
Model M-5-235C

Carburetor Air Intake Filter,
Donaldson P/N 126491

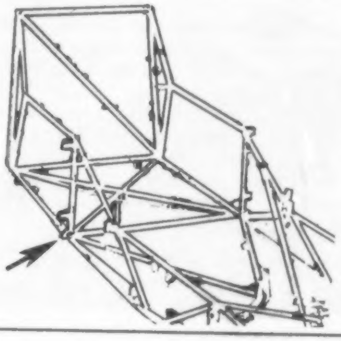


This paper element filter partially disintegrated during flight and was ingested into the carburetion system. A forced landing resulted. Time in service was indicated as 705 hours. Careful inspection of carburetor intake systems is recommended.

PIPER

Piper
Model PA-23-250

Flap Torque Tube Bracket,
P/N 17159-1



The pilot reported the aircraft had a tendency to roll during flight. An inspection of the aircraft revealed a wing flap partially extended, caused by the flap torque tube attach bracket being cracked and nearly broken off at the flap actuator end. Aircraft time - 2, 665 hours.

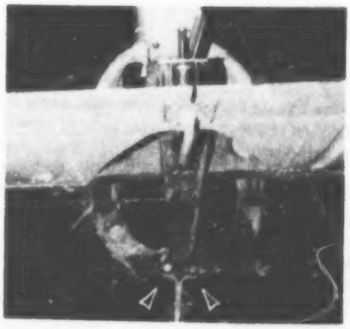
Piper
Model PA-23-160

Main Landing Gear Drag Link Bolt,
P/N AN176-26

During an annual inspection, the left main landing gear drag link bolt was found broken near the mid-section. The bolt also showed evidence of fretting. The same bolt for the right main landing gear, when examined with dye penetrant, displayed surface fractures and fretting. Aircraft time - 600 hours.

Piper
Model PA-28-140

Bulkhead,
P/N 62445-00



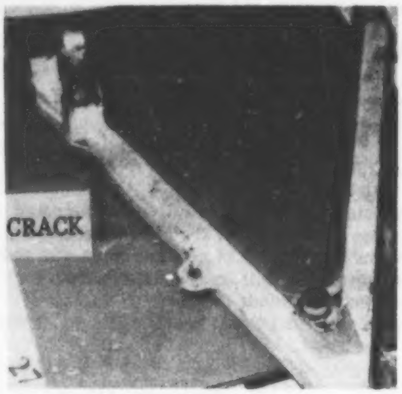
The picture shows damage to the rear fuselage bulkhead. The damage was apparently caused by a bad landing. The stabilator control cable tension was "zero" because of distortion of the lower cable pulley position. Nose-up travel of the stabilator was restricted. Extent of the damage was hidden until the area was opened. Aircraft time - 2, 215 hours.

Piper
Model PA-28RT-201

Link and Brace Assembly,
P/N 76426-03

The gear warning light was flickering and the hydraulic pump was intermittent. An inspection revealed a crack in the arm of the link and brace assembly. Total aircraft time - 1, 015 hours.

The repair station found an identical cracked link and brace assembly on another PA-28RT-201 with 1, 100 hours total time.



Piper
Model PA-31-350

Spar,
P/N 40122-03

There have been three recent reports of finding the horizontal stabilizer rear spar cracked at the outboard elevator hinge attach point. Average aircraft time - 8, 242 hours.

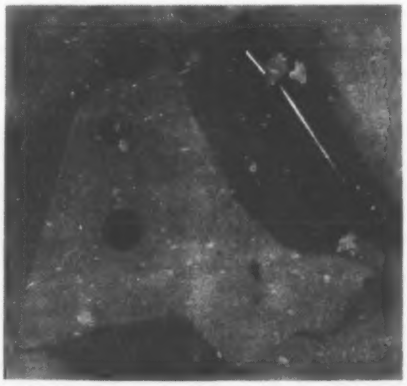
Piper
Model PA-32RT-300T

Downlock,
P/N 39078-02

The pilot extended the gear and observed three green gear down lights during an approach for landing. During the normal landing, the nose gear slowly retracted as the aircraft weight settled on the gear. An investigation revealed the downlock hook was broken and the bolt that secures the bushing was bent.

There have been several recent reports of broken downlocks. One operator has had five downlocks break on one aircraft in 535 hours of operation.

Similar articles appeared in March and September 1980 Alerts.



Piper
Model PA-34-200T

Nose Baggage Door,
P/N 9691700

"The nose baggage door came open during lift-off. The flight was aborted and the aircraft landed straight ahead. An investigation revealed the roll pin that attaches the latch to the external handle was missing. There have been several reports of this nature. The submitter recommends a heavy roll pin secured with safety wire through the pin."

The above article was published in the March 1980 Alerts. There was a recent report of the nose baggage door on a PA-34-200T coming open just as the aircraft lifted off. The roll pin was missing from the baggage door latching mechanism. Airworthiness Directive 79-23-01 (Piper SB 633A) was complied with 212 hours prior to the door opening. The submitter of this report also recommends safety wiring of the roll pin and recommends the AD and SB be revised to require safety wiring of the roll pin.

Piper
Model PA-38-112

Throttle Cable Control,
P/N 77907-02

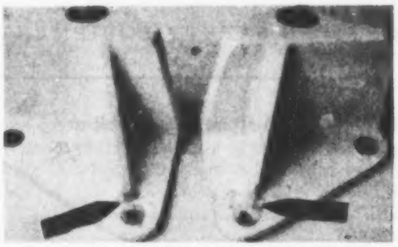
The throttle cable was found broken. The cable housing was crushed where it had caught on the co-pilot's left rudder bar. The cable failed at the crushed housing area. Aircraft time - 600 hours.

ROCKWELL INTERNATIONAL

Rockwell
Model 112TCA

Fitting Main Landing Gear
Side Stay, P/N 42274-1 and -2

The left and right side stay fittings were found cracked during a 100 hour inspection. The new fittings were modified and have -501 and -502 dash numbers. There was no record or other indication of hard landings. Total aircraft time - 932 hours.

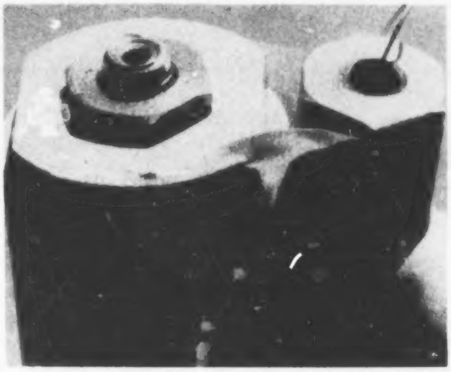


SIKORSKY

Sikorsky
Model S-55

Over-Torque Switch,
P/N HE-1

The over-torque switch on the Airesearch TSE 331 engine was found broken after approximately 150 hours time in service. The reason given for failure is that the "B" nut was drilled too deep, resulting in very little material between the nut and shaft. The reporting repair station found three other switches in the same condition - drilled too deep. A complete failure of the switch during flight could result in the loss of all engine oil.



Sikorsky Model S-76A	Landing Gear Emergency Floatation System	There has been a reported case of the shorting springs used as a safety precaution during shipping, having been inadvertently left in the cartridge receptacles. Sikorsky Customer Service Notice No. 76-35 refers to this item.

UNIVAIR

Univair (Globe) Model GC-1B	Horizontal Stabilizer	The elevators were discovered locked after completion of a loop. The aircraft was landed using the trim tabs. After the fairings were removed, both front and rear horizontal stabilizer spars were found broken. The front spar broke where the inboard rib is riveted to the spar on the left and right sides. The rear spar broke where the inboard elevator hinge attaches with four bolts. The break was through the two inboard bolts on the left side. The right side was not broken. There was evidence of a previous crack in the top of two front spars. It is recommended that aircraft be inspected for similar condition.

ACCESSORIES

AMERICAN SAFETY EQUIPMENT CORPORATION

American Safety Equipment Corp. Seat Belt P/Ns 449105-403; 500869-403 & -405; 500870-403 & -405; 500872-403; 500878-401, -403 & -405; 500879-401 & -403; 500987-401 & -403; 501423-401; & 501429-401	Lap Belt Assemblies	There is a possibility that some connectors may be too thick to fit under the two tabs in the base of the buckle. The dimension between the tabs and the base of the buckle should be 0.115 to 0.125 inches. ASEC Service Bulletin No. CP-1002, dated May 19, 1980, provides instructions with drawings to correct the problem. ASEC address: Commercial Products Division, 650 Jessie Street, San Fernando, California 91340.

PURITAN-BENNETT

Puritan-Bennett Aero Systems Co. Oxygen Masks	Possible Oxygen Leak, P/N 174039, S/Ns 001 through 0012; P/Ns 174010-01 and -03, S/Ns 0010 through 00144, 146, 147, 149, 00150 through 00194, 195, through 259, 261 through 273, 275 through 292; and P/N ZMR100 series, S/Ns 6603 through 7234	Due to a minor design change to a diaphragm in the ARO regulator, P/Ns F241-1120-1 and -5, a leak to the mask or positive pressure in the mask can develop. This reduces the oxygen duration or can prevent use of the mask. An Airworthiness Directive, Docket No. 80-WE-41-AD, has been proposed requiring replacement of the regulator inlet valve diaphragm assembly, P/N F334-1001-1, per PBASCO SB 1, dated April 15, 1980. The mask should be returned to PBASCO, 111 Penn Street, El Segundo, California 90245, telephone (213) 772-1421, to have the diaphragm assembly, P/N F334-1001-1, replaced with P/N F334-1003-1, Revision E. The diaphragm replacement may be accomplished for some ZMR100 series masks in accordance with the appropriate PBASCO ATA Component Maintenance Manuals 35-10-25, 35-10-27, 35-10-28 or 35-10-29.

SLICK

Slick Magneto Model 4201R	Impulse Coupling

The impulse coupling stop pin fell out during flight, resulting in replacement of the following: accessory case, cam gear, magneto and alternator. This malfunction occurred at 115 hours magneto time.

ENGINES

AIRESEARCH

Airesearch
Model TPE 331

Ignitor Plug,
P/N CH31547

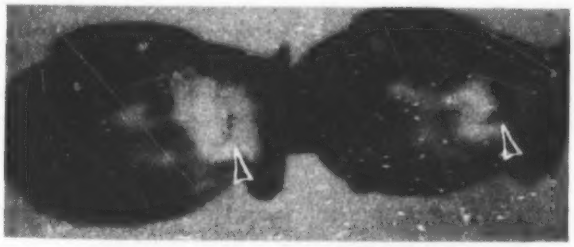
A report has been received of engine performance loss due to air leakage through the insulator of the ignitor plugs. Leakage was occurring through both plugs in two engines. Part time - 1,472 hours.

CONTINENTAL

Continental
Model TSIO-360-E4A

Turbocharger

There have been reports of turbocharger exhaust housing cracks. Cause for the problem is unknown. Total time on the two housings pictured - 300 hours.



Continental
Model IO-520

Crankshaft

The crankshaft broke and separated from the aircraft during landing. This engine had been involved in an aircraft accident prior to installation on this aircraft. There was no record of the engine being inspected as suggested in Continental Service Bulletin M17-5, subject: Examination of Engines Involved in Prop Strike Accidents. The crankshaft broke and separated from the aircraft 6 hours after the engine was installed on the C-210 aircraft. Examination of the crankshaft revealed existing cracks prior to separation.

Excerpt from SBM71-5: "We must, therefore, take the position that the only sure method of inspection for possible internal damage is complete engine disassembly and magnetic particle inspection of the crankshaft, gears and connecting rods, and Zyglo inspection of the crankcase. Owners electing any inspection procedures other than complete disassembly must accept the attendant risks."

Engines involved in prop strike accidents should be inspected in accordance with manufacturer's recommendations.

PRATT & WHITNEY OF CANADA

Pratt and Whitney
Model PT6A-11

Chip Detector

An investigation of an oil leak revealed the chip detector broken at the cannon plug end. The plug is soft metal and may have been over-torqued.

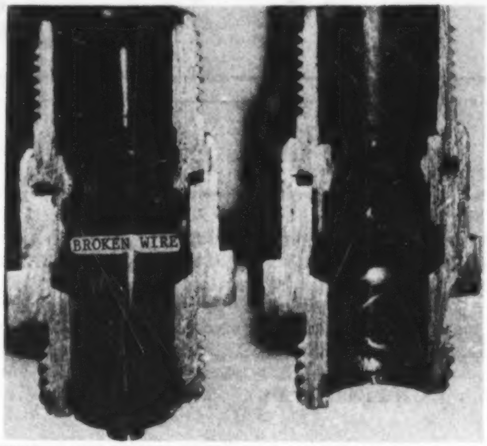
Pratt and Whitney
Model PT6A-41

Chip Detector

One operator advised of several low time failures of chip detector plugs. Breaking of the internal wire prevents the detector from announcing the presence of ferrous metal.

The submitter recommends the plug cavity be filled with a potting compound during manufacture to hold the terminals, wires and magnetic tips rigidly in place.

A check of in-service detectors is recommended. Please submit a Malfunction or Defect Report if faulty detectors are found.



PROPELLERS

McCAULEY

McCauley
Model 3AF32C87

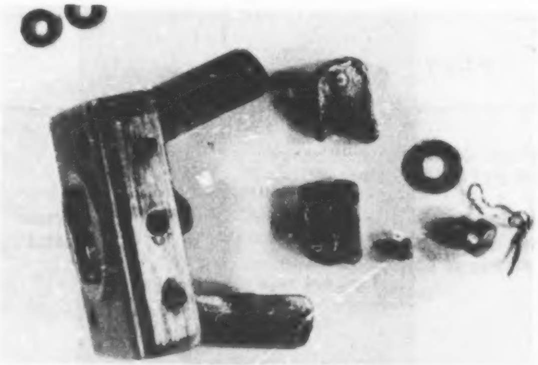
Blade Bearing,
P/N C-2987

The propellers were reported malfunctioning on a Cessna 310. The propellers were removed, and during disassembly, water ran out of the blade retention nuts. Water and corrosion were found in the hubs. The propellers had a total time of only 629 hours, but the serial number of the hubs revealed they were manufactured approximately 4 years previously. Environment and operating conditions may require more frequent calendar time inspections than recommended by the manufacturer.

McCauley
Governor
Model C290D3-D/T16

Flyweights

The flyweight assembly came apart and permitted the plate, screw, washers, etc., to be thrown about inside the governor housing on a Cessna R182 aircraft. The report did not indicate that McCauley Service Bulletin No. 134A had been accomplished.



MAINTENANCE NOTES

INDUCTION SYSTEM FLEXIBLE AIR DUCTS

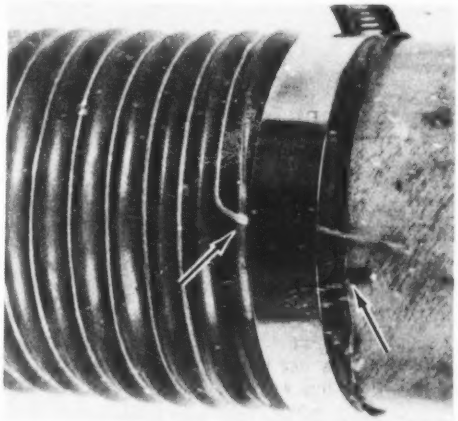
The Beech B23 aircraft engine lost power, resulting in a landing short of the runway. An investigation revealed the air duct from the carburetor heat box to the carburetor had collapsed, stopping air flow to the carburetor.

This recent incident prompted reprint of the following article:

"Several incident and accident reports have been received which were attributed to the failure of the flexible air ducts installed on Cessna single-engine aircraft. Some of the reports indicated the hose assembly collapsed, resulting in loss of engine power.

"To prevent the possibility of restricting air flow through the engine air induction system, it is recommended the duct assembly be examined each 100 hours. Inspect for such duct deterioration as separation of inner lining, broken or frayed cord wrapping, evidence of hose collapsing, indication of reinforcement wire slippage, or evidence of wire not being properly bonded to the duct. Replacement of defective duct assemblies should be accomplished properly when any indication of deterioration is evident.

"The Cessna Aircraft Company provided this photograph to illustrate how they recommend the flexible ducts be clamped. Please note that the ends of the inner reinforcing wire and the outer cord are turned 45 degrees to normal and are secured by the clamp."



DRAIN HOLES

Numerous reports, received annually, identify structural corrosion problems and other types of hazardous conditions that have developed because drain holes in the aircraft were partially restricted or completely closed. Many of these reported problems required an appreciable period of time to reach the state of deterioration found. Therefore, it may be assumed the drain holes were also clogged for at least a comparable time interval.

Regardless of materials used to cover an aircraft, drain holes are necessary to prevent the accumulation of liquids and serve as air vents. To assure the satisfactory accomplishment of these functions, the manufacturer located these drains in specific locations at the low points of wings, control surfaces, fuel compartments, the fuselage belly, etc. Should it be necessary to replace the skin on an aircraft, it is essential that new drain holes be provided at these same locations. Failure to do this creates a suitable environment for future costly problems.

Once opened, drain holes require no maintenance other than a periodic check to determine that they have not become clogged. The skill and time involved in doing this would indeed be a small price to pay for preventing the development of a condition that may not be suspect or detected until too late.

NOTE: There was a recent report of plugged drain holes in a Cessna 150 aircraft. The aircraft had been stripped and repainted sometime prior to finding the drain holes plugged. It is recommended a thorough inspection of all aircraft openings (pitot static, airspeed, drain holes, etc.) be accomplished after aircraft appearance maintenance - cleaning, polish-wax, and painting.

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
FLIGHT STANDARDS NATIONAL FIELD OFFICE
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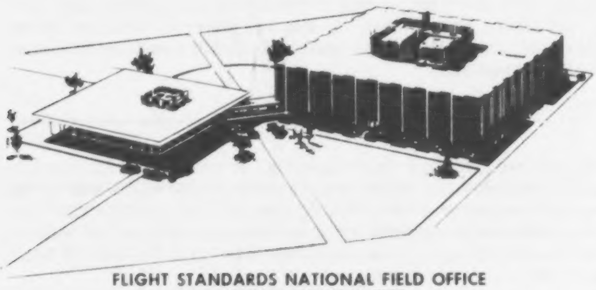
GENERAL AVIATION AIRWORTHINESS ALERTS

DECEMBER 1980



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The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported to be significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: Flight Standards National Field Office, Attn: AFO-580, P. O. Box 25082, Oklahoma City, Oklahoma 73125.

AIRCRAFT

AERONCA

Aeronca Model 7AC	Lift Strut	An area, approximately 2 inches in diameter, was found nearly corroded through on the lower side of the left front lift strut. The corroded area was 4 inches from the fuselage end, and was not visible on the outer surface. The area was found by tapping with a light hammer. Age or hours on lift strut is unknown, but records indicate the aircraft was manufactured in 1947. It is recommended that lift struts on similar aircraft be inspected for this condition.

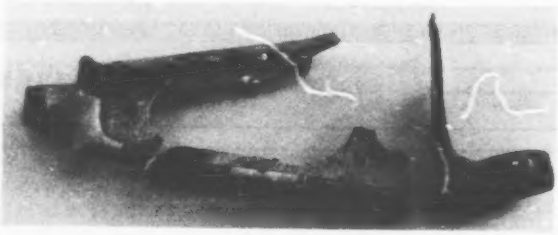
NOTICE TO READERS: The General Aviation Airworthiness Alerts are, for the most part, prepared from information supplied by those who operate and maintain aircraft. The FAA encourages the reporting of all malfunctions or defects that come to the attention of service or operating personnel, even though the problem has been previously reported. The Malfunction or Defect Report, FAA Form 8010-4, which supersedes Form 8330-2, is available from the local General Aviation District Office, and may be used for reporting purposes.

BEECH

Beech Model J35	Engine Mount Channels	While disassembling the nose section, the left and right channels were found broken where the engine front mounts were attached. The cracks were under the wheel well cross tie plate at the forward end of the keel assembly. The area is very difficult to see during normal inspections. Total aircraft time - 4,100 hours.
Beech Model J35	Induction Housing, P/N 35-910003-95	The engine began running rough during cruise. An after landing investigation revealed the hinge on the air door had broken, and a piece of the hinge had lodged under the No. 2 cylinder intake valve. The door hinge was found broken on another Beech 35 but all pieces were intact. It was suggested to remove the air filter and use a flashlight and mirror to inspect the induction housing assembly.
Beech Model 58	Hose, Boot-to-Valve, P/N 95-970000-195	The right wing surface deicer boot was inoperative. An investigation revealed the hose from the boot to the valve was on the vacuum regulator valve located just aft of the firewall. The area is subject to elevated temperatures and the hose had melted. The damaged hose was replaced with MIL 6000-4078 hose. Aircraft time - 512 hours.

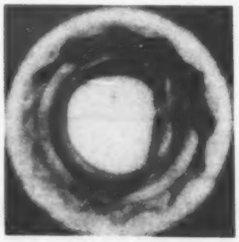
Beech Model B-90	Landing Gear Knee Assembly, P/N 50-810032-8

The right main landing gear knee assembly failed during landing, allowing the strut shaft to extend out of the shaft barrel and separate from the aircraft. The knee assembly appeared to have corrosion in the area of the cracks and fracture points. The aircraft had 4,500 hours, and the landing gear was to be replaced at 5,000 hours. A thorough visual inspection of the landing gear and wheel well area is recommended. Corroded or suspect areas may require NDT type inspection.



Beech Model A100	Nut and Bolt

During a 100-hour inspection, the locking insert was found stripped or torn out of both left and right top forward wing attach bolt nuts. The right wing top forward attach bolt was found corroded and pitted when removed. Total aircraft time - 1,993 hours. Please submit a Malfunction or Defect Report if this condition is found.



A MINUTE FOR SAFETY IS BETTER THAN A MONTH FOR REPAIRS.

CESSNA

Cessna Model 170	Fuel Cap Shaft Seal	A fuel contamination investigation revealed the "O" ring seal around each fuel cap locking shaft was hard, brittle, and had deteriorated to one-half the original thickness. The deteriorated seals allowed water to enter the fuel tanks. It is recommended that older aircraft be inspected for this condition.
Cessna Models 180, 185, and 188 Series	Tailwheel Spring Assemblies	There have been numerous reports of corrosion found inside the tubular tailwheel springs. Failure of the springs has occurred in some cases. It is recommended the interior of these springs be inspected at each 100-hour or annual inspection.

Cessna Models 180, 185, and 188	Vertical Fin Rear Spar Cracks

The affected aircraft should be visually inspected for cracks in the vertical fin rear spar. The area to be examined includes the flanges and web of the spar approximately 1 inches below the rudder lower hinge.

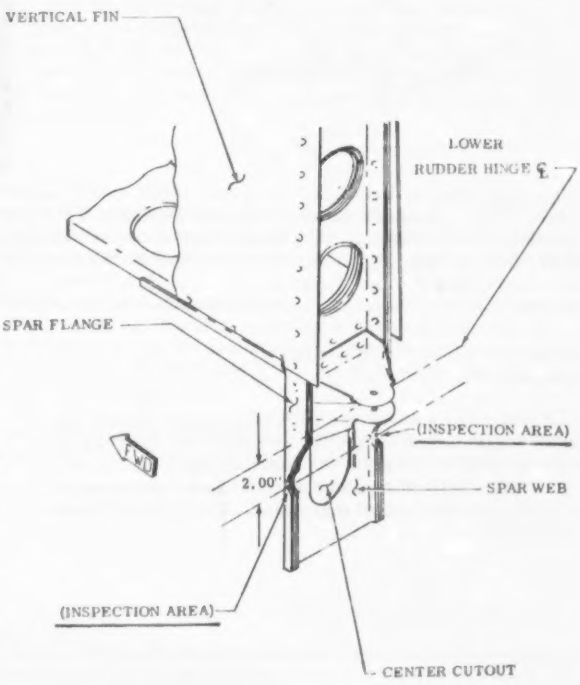
If no cracks are found, the inspection should be recorded in the aircraft maintenance records and the inspections repeated every 100 hours. If cracks are found, the vertical fin spar assembly must be replaced before further flight.

When removing/replacing the fin assembly, the fuselage should be supported at Station 209.0 for the 180 and 185, and at Station 212.0 on the 188, to remove the weight of the fuselage from the tail wheel.

If a spar is found cracked, please submit an FAA Malfunction or Defect Report. Please be sure to include the airplane total time in service and a complete description of the cracks.

Cessna Service Letter SE80-85, dated September 22, 1980, pertains to this item.

Aircraft affected Model 180 - S/Ns 18052385 through 18053147; Model 185 - S/Ns 18502311 through 18504070; Model 188 - S/Ns 18801375 through 18803725; and Model T188 - S/Ns T18803307T through 18803725T.



Cessna Model 210	Fuel Strainer Mount	A crack was found in the nose wheel well right side tunnel wall during an inspection. The crack was observed through the right aft engine mount lightening hole. Removal of the fuel strainer revealed additional cracks. Star cracks were emanating from the rivets above and below the fuel strainer. A large crack originated at the center of the mount bolt holes and curved aft. Cause of the cracking may have been from the twisting force on the strainer during removal and reinstallation for filter inspection. Total aircraft time - 3,774 hours.

Cessna
Model 210E

Muffler

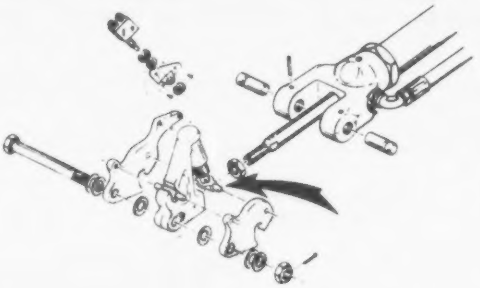
The muffler was found burned through where the stainless steel data plate is attached to the muffler. Total aircraft time - 350 hours.

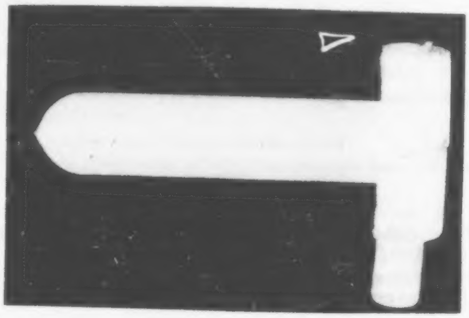
Another C-210E and a C-U206, each with less than 370 hours, had the same muffler problem.

Cessna
Models 210
and 337 Series

Nose Gear Actuator Spring
Guide,
P/N 1280206-1

There have been several reports of the ears being found broken on this nonmetallic part. The usual result of this failure is that the nose gear will not lock in the down position. It is recommended this part be checked at each inspection.



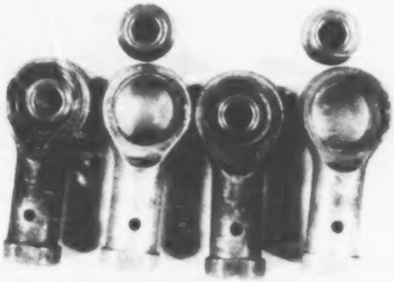


NOTE: Similar articles appeared in the 1975 and 1976 General Aviation Inspection Aids Summary and in the August 1979 General Aviation Airworthiness Alerts. A recent report of the same type failure necessitates reissuance. Submitter recommends the part be made of metal as the area is subject to heat.

Cessna
Model 310N

Rod Ends

Pilots requested a check of manifold pressure and engine control rigging. The inspection revealed the control rod ends were worn to the point the bearings were falling out. A thorough check of engine controls is recommended at every 100-hour and annual inspection. Aircraft total time - 1, 650 hours.



Cessna
Model 310R

Doubler

During an annual inspection, the left and right doublers for the nose gear drag brace were found cracked. The nose well baggage liner must be removed to inspect the doublers. Cessna Service Letter ME77-12 applies to installation of doublers. Total aircraft time - 931 hours.

Cessna
Model 500

Flap Cables

During a routine phase inspection, the left and right flap cables were found broken and frayed. Four of the seven main strands in each cable were broken completely and the remainder were frayed. The damaged area was where the cables attach to the inboard flap bellcranks. Aircraft total time - 4, 148 hours.

GATES LEARJET

Learjet Model 24	Shorted Wire	During a maintenance run for a reported battery high temperature indication, the low pressure fuel warning light illuminated and the following circuit breakers popped: Left and right firewall shutoff valves, left and right jet pump valves, right EPR, left landing light and cabin heat. The mechanic shut down the engines. The fuel shutoff and jet pump valves failed in the open position. Wire P31A16, from the V-regulator to the overvoltage control box, was found shorted against the shielded wire (E11E24) for the center fuel tank quantity indicator, which, in turn, shorted to the left engine low pressure fuel filter, burning a hole in the filter. The fuel burned in the bottom of the compartment below the left battery. The fuel filter drain line is in this area, and the heat from the fire caused a section of the line to be blown out three-fourths of an inch long and half the diameter of the 3/32-inch tubing. With the pump running, there was heavy fuel flow coming out of the line which flooded the compartment and covered a 20 foot square area on the ground. This sudden surge of fuel put the fire out due to lack of oxygen. Five or six streams of fuel were coming from the aft compartment. Airworthiness Directive 80-09-06 and 80-19-09 pertain to inspection of the area.
Learjet Model 35A	Sleeve, P/N SL00T-10-13	During cruise flight, avionics equipment became inoperative, engine fuel flow was erratic, and nicad battery temperature went to 140 degrees with warning light. An after-landing investigation disclosed a sleeve had blown off the ducting near the hot air bypass valve in the aft compartment. Engine hot air was dumped into the compartment, causing equipment failure and battery warning. Further investigation revealed the sleeves on the bleed air pressure and heated air distribution system swell and tend to pull from under the clamps when bleed air is at maximum pressure. Submitter recommends stronger sleeves with improved clamps. A torque check of present clamps is also recommended.

ISRAEL AIRCRAFT

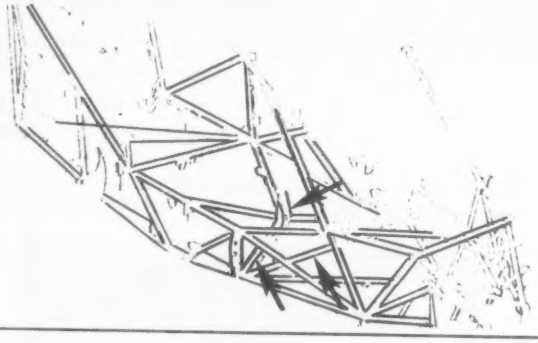
Israel Model 1124	Chafed Wires	The fuel boost pump access cover was removed to replace an inoperative boost pump. When removed, it was discovered the boost pump electrical wires were being chafed by the access panel screws. The same condition was found at the opposite pump and at both boost pumps on another aircraft. The wire bundle out of the fuselage bulkhead is routed down through two Adel clamps, then up to the pump brackets. Clearance was obtained by reversing the two existing Adel clamps and rerouting the wire bundle. Total times on the two aircraft reported - 411 and 499 hours. It is recommended that aircraft be inspected for this condition.

NO INVESTMENT PAYS BETTER DIVIDENDS THAN SAFETY.

PIPER

Piper
Model PA-23-150

Fuselage Frame Assembly,
P/N 17162-05



Severe internal corrosion was found in several areas of the fuselage frame tubing. The areas were the tubing sections between the left and right top deck attachment brackets, the area of the wing front spar attachment fitting assembly, the tubing between the right top deck attachment bracket and the wing front spar attachment fitting assembly. These areas were corroded to the extent that holes could easily be punched through the tubing walls. Aircraft time - 6, 451 hours.

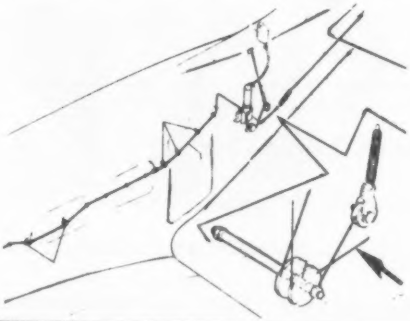
Piper
Model PA-28R-200

Drag Link,
P/N 67025-002

The drag link was found cracked and bent. Further investigation disclosed excessive bushing wear. Poor or improper maintenance practices may have contributed to the part failure. Aircraft total time - 1, 967 hours.

Piper
Model PA-31T

Cable Assembly,
P/N 51765-02



The control cable from the stability augmentation system (SAS) servo was found severed. The ends of the broken cable were frayed. Total aircraft time - 1, 810 hours.

Piper (Aerostar)
Model 600

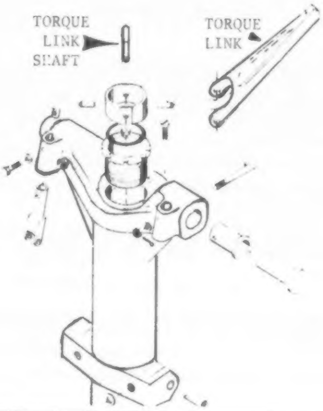
Spar Cap

The wing skins were observed to have raised sections along the spar cap between the fuselage and nacelle. An investigation revealed corrosion had formed in the spar caps. The corrosion had characteristics of exfoliation as evidenced by splitting and flaking. The most severe corrosion was approximately 12 to 16 inches outboard of the butt rib. Corrosion was also found around the aft blind rivet that attaches the right main gear door to the wing structure. The aircraft history indicated the aircraft had operated in Africa approximately 4 years prior to returning to the United States.

ROCKWELL INTERNATIONAL

Rockwell Model 690A	Torque Link Shaft, P/N ED12406-1

The left main gear did not pivot properly for retraction after takeoff. Three green gear down lights were obtained but the left main wheel was turned 90 degrees to the direction of flight. The aircraft received substantial damage during the landing. The torque link was found on the runway with the broken end of the torque link shaft still attached. The submitter recommends the part be removed and magnafluxed each 1,000 hours, rather than each 3,000 hours as specified in the maintenance manual. Aircraft time - 2,001 hours.



Rockwell Model NA-265-60	Clip, Fuselage Entrance Door, P/N 265-300222-139	The entrance door aluminum locking clip failed during flight. The failure allowed the locking pins to rotate enough to illuminate the door open light and deflate the door seal. Pressurization problems resulted from the deflated door seal. A new, improved steel clip, P/N 265-300222-293, was installed.

SIKORSKY

Sikorsky Model S-76	Nose Wheel Self-Centering	The nose wheel will not self-center after lift-off if it has been swiveled backward (about 180 degrees) just before lift-off. If retracted in this position, the nose wheel will jam in the "up" position and normal extension will not be possible. To prevent this condition from occurring, slight forward taxi is recommended prior to lift-off.
Sikorsky Model S-76A	Tail Boom	During inspection, a $10\frac{1}{2}$-inch crack in the top skin of the tail boom was detected.

STOL

Stol Model UC-1	Screen, Fuel Outlet Assembly, Republic P/N 17P65013, and Assembly, Fuel Screen, Stol P/N 67-060120 .	A fuel tank finger strainer that had become clogged by rust may have been the cause of power loss on one engine shortly after take-off. The strainer was the cadmium plated steel type used in the Republic RC-3. It was retained and reused during the twin engine conversion. Removal of a sealed access panel is necessary to inspect the two finger strainers in the fuel cell.

SWEARINGEN

Swearingen
Models SA26 and
SA226 Series

Inspection of Door
Latch Mechanisms

Following an investigation of an incident in which an SA226AT aircraft experienced a rapid decompression after part of the aft cargo door separated in flight, it was determined the misadjustment of a latch was a major factor in the separation of the door. Examination of the door revealed the "click-clacks" (split barrel) on one of the latches had been filed or ground down, which affected the engagement of the latch in its receptacle. The airworthiness of the fuselage depends on the integrity of the passenger and cargo door latches to withstand flight and pressurization loads; therefore, it is imperative that the latch components and sill receptacles be maintained dimensionally so that proper engagement occurs.

Additionally, a broken latch actuator rod was found which prevented the latch from being engaged. Actuator failure can occur at the rod end threaded shank by forcing the door handle to the closed position when the latches are not properly engaged or adjusted.

Airworthiness Directive 80-09-08 and Service Bulletins 52-009 and 52-10-031 pertain to cargo door latching mechanisms and door warning systems.

AIRFRAME COMPONENTS

GOODYEAR

Goodyear

Fuel Cells, BTC-39 Series
Construction

Airworthiness Directive 78-05-06 requires inspections of these cells to determine integrity. There is evidence that some maintenance facilities complying with this A D may have improperly disconnected vent lines within the wings and failed to reconnect them. This, of course, can easily lead to fuel leakage within the wings and potential hazards. Maintenance facilities are urged to assure the integrity and continuity of all fuel systems at any time work or inspections are performed. They may wish to reevaluate their procedures on any aircraft on which they have accomplished this AD.

ENGINES

LYCOMING

Lycoming
Model LTIO-540-J2BD

Support Assembly,
P/N WL-12452

While investigating the cause of a rough running engine, the turbocharger support assembly was found broken. Both lower legs were broken at the welded reinforcement gussets. Part total time - 180 hours.

A similar article appeared on page 13 of Alerts No. 22, May 1980.

MAINTENANCE NOTES

BEECH MODEL 18 AND C45 SERIES AIRCRAFT -- WING STRUCTURE

X-Ray inspections of Beech 18 and C45 airplane wing structures, as required by Airworthiness Directive 75-27-09, Amendment 39-2482, as amended by Amendments 39-2591 and 39-3878, can only be performed by approved facilities. The following is a list of those facilities which have been authorized to conduct those inspections in accordance with Paragraph H of the AD. The FAA district office having surveillance responsibility for each facility is also listed, as personnel of that office are most familiar with the current status of each facility.

	FACILITY	FAA OFFICE
Alaska	Welding Institute of Alaska 2114 Railroad Avenue Anchorage, Alaska 99501	General Aviation District Office No. 1 1515 East 13th Avenue Anchorage, Alaska 99501
Arizona	ICC X-Ray Company 6262 East 34th Street Tucson, Arizona 85711	General Aviation District Office 9 15041 North Airport Drive Scottsdale, Arizona 85260
Arkansas	Independent Testing Laboratories, Inc. 1 Rand Street Searcy, Arkansas 72143	General Aviation District Office No. 6 FAA and Weather Service Building Room 201 - Adams Field Little Rock, Arkansas 72202
California	X-Ray Products Corporation 617 South Raymond Avenue Alhambra, California 91803	General Aviation District Office No. 6 Santa Monica Municipal Airport 3200 Airport Avenue, Suite 3 Santa Monica, California 90405
Florida	O. C. Laboratories, Inc. 2870 Stirling Road Hollywood, Florida 33021	General Aviation District Office No. 5 Building 121, Opa Locka Airport Opa Locka, Florida 33054
Georgia	McPherson Nondestructive Testing Atlanta Testing & Engineering Co. 105 Technology Parkway Norcross, Georgia 30092	General Aviation District Office No. 1 Federal Aviation Administration Building Charlie Brown County Airport Atlanta, Georgia 30336
Hawaii	Finlay Testing Laboratories 2825-A Koapaka Street Honolulu, Hawaii 96819	Flight Standards District Office No. 61 Post Office Box 29728 Honolulu, Hawaii 96820
	Industrial Inspection Services, Inc. 2629 Ahekolo Street Honolulu, Hawaii 96813	Flight Standards District Office No. 61 Post Office Box 29728 Honolulu, Hawaii 96820
Indiana	Industrial Heat Treating and Metallurgical Co., Inc. 2131 Northwestern Avenue Indianapolis, Indiana 46202	General Aviation District Office No. 10 Building No. 1, Municipal Airport Post Office Box 41525 Indianapolis, Indiana 46241
Kansas	H. R. Inspection Service 6837 Woodland Drive Post Office Box 3280 Shawnee Mission, Kansas 66203	General Aviation District Office No. 11 Administration Building Fairfax Airport Kansas City, Kansas 66115
Maryland	Reliance Testing Laboratories, Inc. 2199 Greenspring Drive Post Office Box 85 Timonium, Maryland 21903	General Aviation District Office No. 21 Elm Road Baltimore/Washington International Airport Baltimore, Maryland 21240
Massachusetts	J. G. Sylvester Associates, Inc. 900 Hingham Street Rockland, Massachusetts 02370	General Aviation District Office 13 Norwood Municipal Airport Norwood, Massachusetts 02062

Michigan	Industrial Testing Laboratories, Inc. 669 Stocking Avenue, Northwest Grand Rapids, Michigan 49504	General Aviation District Office No. 8 Kent County Airport 5500 44th Street, Southeast Grand Rapids, Michigan 49508
	Magna Check 2125 Riggs Warren, Michigan 48091	General Aviation District Office No. 20 Flight Standards Building Willow Run Airport Ypsilanti, Michigan 48197
	Michigan Testing Engineers, Inc. 24355 Capitol Avenue Detroit, Michigan 48239	General Aviation District Office No. 8 Kent County Airport 5500 44th Street, Southeast Grand Rapids, Michigan 49508
Missouri	St. Louis Testing Laboratories, Inc. 2810 Clark Avenue St. Louis, Missouri 63103	Flight Standards District Office No. 62 9275 Genaire Drive Berkley, Missouri 63134
New Hampshire	Venegas Industrial Testing Labs, Inc. 13 Progress Avenue, Nashua Ind. Park Nashua, New Hampshire 03060	General Aviation District Office No. 15 Portland International Jetport Portland, Maine 04102
New York	Buffalo X-Ray Company 81-83 East Market Street Buffalo, New York 14204	General Aviation District Office No. 17 Hangar No. 3 Rochester-Monroe County Airport Rochester, New York 14624
	Certified Testing Laboratories, Inc. 2626 Halperin Avenue Bronx, New York 10461	General Aviation District Office No. 11 Building No. 53, Republic Airport Farmingdale, New York 11735
North Carolina	Piedmont Aviation, Inc. Smith Reynolds Airport Winston Salem, North Carolina 27102	General Aviation District Office No. 3 FAA Building, Municipal Airport Post Office Box 27005 Charlotte, North Carolina 28208
Ohio	Dayton X-Ray Company 1150 West 2nd Street Station B, Post Office Box 7275 Dayton, Ohio 45407	General Aviation District Office No. 5 4242 Airport Road Lunken Executive Building Cincinnati, Ohio 45226
Oklahoma	Tulsa Gamma Ray, Inc. 1127 South Lewis Tulsa, Oklahoma 74104	Flight Standards District Office 65 General Aviation Terminal, Room 103 Tulsa International Airport Tulsa, Oklahoma 74115
Texas	Jack Brink 9023 Wetmore Road San Antonio, Texas 78216	Flight Standards District Office No. 64 1115 Paul Wilkins Road, Room 201 San Antonio, Texas 78216
	Consolidated X-Ray Services Corporation 10931 Indian Trail Drive Dallas, Texas 75229	General Aviation District Office No. 2 8032 Air Freight Lane Love Field Airport Dallas, Texas 75235
	Hatfield Aviation, Inc. 8109 Braniff Street Post Office Box 12756 Houston, Texas 77061	Flight Standards District Office No. 62 8800 Paul B. Koonce Drive, Room 152 Houston, Texas 77061
	Sumar Inspection Corporation Airpark Airport Highway 544 Addison, Texas 75001	General Aviation District Office No. 2 8032 Air Freight Lane Love Field Airport Dallas, Texas 75235

MAINTENANCE NOTES (Con.)

Washington	X-Ray Incorporated 7500 Perimeter Road South Seattle, Washington 98108	Flight Standards District Office No. 61 Federal Aviation Administration Building Boeing Field/King County Airport Seattle, Washington 98108
Wisconsin	McManus Inspection Service 8517 West Kaul Avenue Milwaukee, Wisconsin 53225	General Aviation District Office No. 13 FAA/Weather Bureau Building Milwaukee, Wisconsin 53207
	Wisconsin Industrial Testing, Inc. 5600 West Hemlock Street Milwaukee, Wisconsin 53223	General Aviation District Office No. 13 FAA/Weather Bureau Building Milwaukee, Wisconsin 53207

SPARK PLUG FOULING

Spark plug fouling in your aircraft engine may be a problem. It is desirable to reduce the problem as much as possible, however. Avco Lycoming Service Letter L192 provides information which may be very helpful in reducing spark plug fouling. To aid our readers, the entire text of Service Letter L192 is printed here:

"In many cases, spark plug fouling resulting from the tetraethyl lead (TEL) in aviation fuels can be reduced or eliminated by proper operating techniques.

"The problem of lead fouling arises when low engine operating temperatures coupled with a rich mixture prevent the complete vaporization of the TEL. Under these conditions, lead deposits can form in the combustion chamber and may adhere to the spark plug electrodes, causing misfiring. By establishing and maintaining proper engine operating temperatures, the TEL can be kept properly vaporized and pass out the exhaust system.

"For operators experiencing lead fouling, the following operating recommendations are made:

1. By use of the spark plug recommendation charts, be certain proper plugs are installed. Do not simply replace the same part number of those removed. A previous mechanic may have installed the wrong plugs. Reference Service Instruction No. 1042.

2. Do not accept an over rich carburetor or fuel injector at idle or off idle engine speeds. Have a mechanic adjust the mixture.

3. After a flooded start, slowly run the engine to high power to burn off harmful lead deposits, then return the engine to normal power.

4. When parked for any reason, avoid closed throttle idle. Set engine at 1200 RPM. The fuel contains a lead scavenging agent, but it only functions with a spark plug nose core temperature of 800 degrees Fahrenheit or higher. To have a minimum of 800 degrees nose core temperature, you must have a minimum of 1200 engine RPM. Also, the engine will run cooler and smoother and the alternator/generator will have more output at 1200 RPM. (Taxiing is exempt. Accept whatever RPM is required.)

5. Use normal recommended leaning technique at cruise conditions regardless of altitude and re-lean the mixture with application of alternate air or carburetor heat. If aircraft is used as a trainer, schedule cross country operation whenever possible.

6. Avoid fast, low power let down from altitude whenever possible. Plan ahead. Descend with power. (Avoid over rich conditions.)

7. Avoid closed throttle landing approaches whenever possible. Use a slight amount of power. Remember carburetors and fuel injectors are set slightly rich at closed throttle.

8. Keep engine operating temperature in the normal operating range. Too many people think the lower the temperatures the better. Keep cylinder head temperatures in normal operating range by use of normal power and proper leaning, and use oil cooler baffles to keep oil temperature up in winter.

9. Swap top and bottom spark plugs every 25 to 50 hours. Top plugs scavenge better than bottom.

10. After flight or ground operations and before shut down, go to 1800 RPM for 15 to 20 seconds, reduce to 1200 RPM, then shut engine off immediately with mixture control."

AVCO Lycoming "Flyer" - January 1980

WINTER IS UPON US

The winter flying season is upon us in full swing (except for those few that are more fortunate to be in sunbelt states). Rapidly changing weather conditions and high percentage of IFR weather prevail. The once familiar checkpoints have disappeared with the fallen leaves and ongoing snows that winter brings about.

The most common accidents during this season are caused by inadequate preflights made by pilots and crews that rush through inspections because of the cold. They may get into these accidents by:

a. Attempting takeoffs with coatings of frost, ice, or snow on the tail and wing surfaces;

b. forgetting to plan for high winds aloft and thus being forced to make emergency landings after running low on fuel;

c. sliding on ice/snow-covered runways; and

d. inadvertently flying into adverse weather conditions.

The prevention measure for these accidents, or near-accidents, is preparation. Plan and prepare your next winter flight to expect the worst, and experience the best. Don't change anything. Be here in the spring.

APPOACH - MARCH 1979

AVOID RUNNING A FUEL TANK DRY AS A ROUTINE PROCEDURE

Fuel injection can prolong a restart after running a tank dry in flight because it is more vulnerable to vapor lock than a carburetor. This does not mean that the engine may not get started again, but it has been proven that fuel injected engines often require a longer restart period, during which precious altitude is being lost and undesirable sudden cooling of the engine is taking place with its attendant potential damage to the engine.

One of the engine problems being reported more frequently, as a result of running a fuel tank dry, has been warped wastegates on turbocharged engines. A turbocharger wastegate may be operating at a temperature as high as 1600 degrees Fahrenheit at altitude. If the engine quits because of fuel starvation, the metal in the wastegate will suddenly be forced to undergo a rapid change from, say, 1600 degrees Fahrenheit to a temperature well below freezing. When this happens, the wastegate warps or bends, causing a loss of power and an expensive repair or replacement.

Excerpts from AVCO Lycoming "Flyer" - Janu[illegible]y 1980

STUCK MICROPHONE SWITCHES

Air Traffic personnel advise that there appears to be an increase in the number of stuck microphone switches. If you suspect or have been advised that your microphone is being keyed inadvertently, please have it checked. A keyed mic blocks all use of that frequency in the area and could prevent urgent communications between an aircraft and Air Traffic personnel. So, when not using the microphone, place it in the holder (don't sit on it) and check, or have checked, any microphone or mic switches that are not functioning properly.

REVIEW AND INSPECT

During an inspection of a C-177 following nose gear damage, it was disclosed that the nose gear support gusset, P/N 1713156-1, had not been replaced during a previous repair to the aircraft in 1969 The aircraft had received an annual inspection 26 hours previously. When performing annual inspections, IAs should review the aircraft log books for previous repair work and ascertain that the repair was properly accomplished, especially if the aircraft is "new" to their area.

TIRE PRESSURE GAUGE PRACTICE

Quite often it is found that the difference in reported air pressures are entirely due to the difference in accuracy in different gauges, rather than in any change in air pressure.

It is not unusual to find an inaccurate tire gauge in constant use with a tag that states that the gauge reads a certain number or pounds too high, or too low. Unfortunately, this error will change as different pressures are checked. A tire gauge reading 10 pounds high at 80 pounds pressure may very well read 25 pounds too high at 150 pounds pressure. Therefore, incorrect tire gauges should either be repaired or replaced. They should not be continued in service.

Cold temperatures may also affect tire gauges and cause pressure readings to be lower than they actually are. Occasionally, too, a gauge has been mistakenly treated with oil or some other lubricant in expectation of making it work better. This, of course, will actually cause incorrect readings and probably render the gauge unfit for further service.

It is good practice to have gauges recalibrated periodically and to use the same gauge for performing an inflation cycle --for the original 12- or 24-hour stretch period. Dial type gauges, of good quality, are highly recommended for all tire maintenance installations--regardless of size!

B. F. GOODRICH

---IF ENGINES COULD TALK---

SUMMARY OF AN INTERMITTENT ENGINE PROBLEM EXPERIENCED ON A C-R182 OVER A PERIOD OF 6 MONTHS - AND THE FIX. The aircraft was used by three business partners.

PROBLEM:	Engine rough during run-up. Would usually clear with leaning or application of full power. Problem thought to be plug fouling.
RESULTED IN:	Two aborts on runway during takeoff - engine balked - 2 emergency landings - engine rough and power loss immediately after takeoff.
MAINTENANCE ACTION (performed by a maintenance facility):	New plugs installed - fuel pump changed - magnetos modified per service bulletin - propeller governor checked and calibrated. Extensive troubleshooting work.
FIX (by another maintenance facility):	Replaced broken intake valve spring on No. 1 cylinder.

THE ENEMY

I AM more powerful than the combined armies of the world. I have destroyed more men than all the wars of all nations. I massacre thousands of people every year. I am more deadly than bullets, and I have wrecked more homes than the mightiest guns.

In the United States alone, I steal over 500 million dollars each year. I spare no one, and I find my victims among the rich and poor alike, the young and old, the strong and weak. Widows know me to their everlasting sorrow. I loom up in such proportions that I cast my shadow over every field of labor.

I lurk in unseen places and do most of my work silently. You are warned against me, yet you heed me not. I am relentless, merciless, and cruel. I am everywhere - in the home, on the streets, in the factory, at railroad crossings on land, in the air, and on the sea.

I bring sickness, degradation, and death, yet few seek me out to destroy me. I crush, I maim, I will give you nothing and rob you of all you have.

I am your worst enemy - I am CARELESSNESS.

Author Unknown - APPROACH/February 1980

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